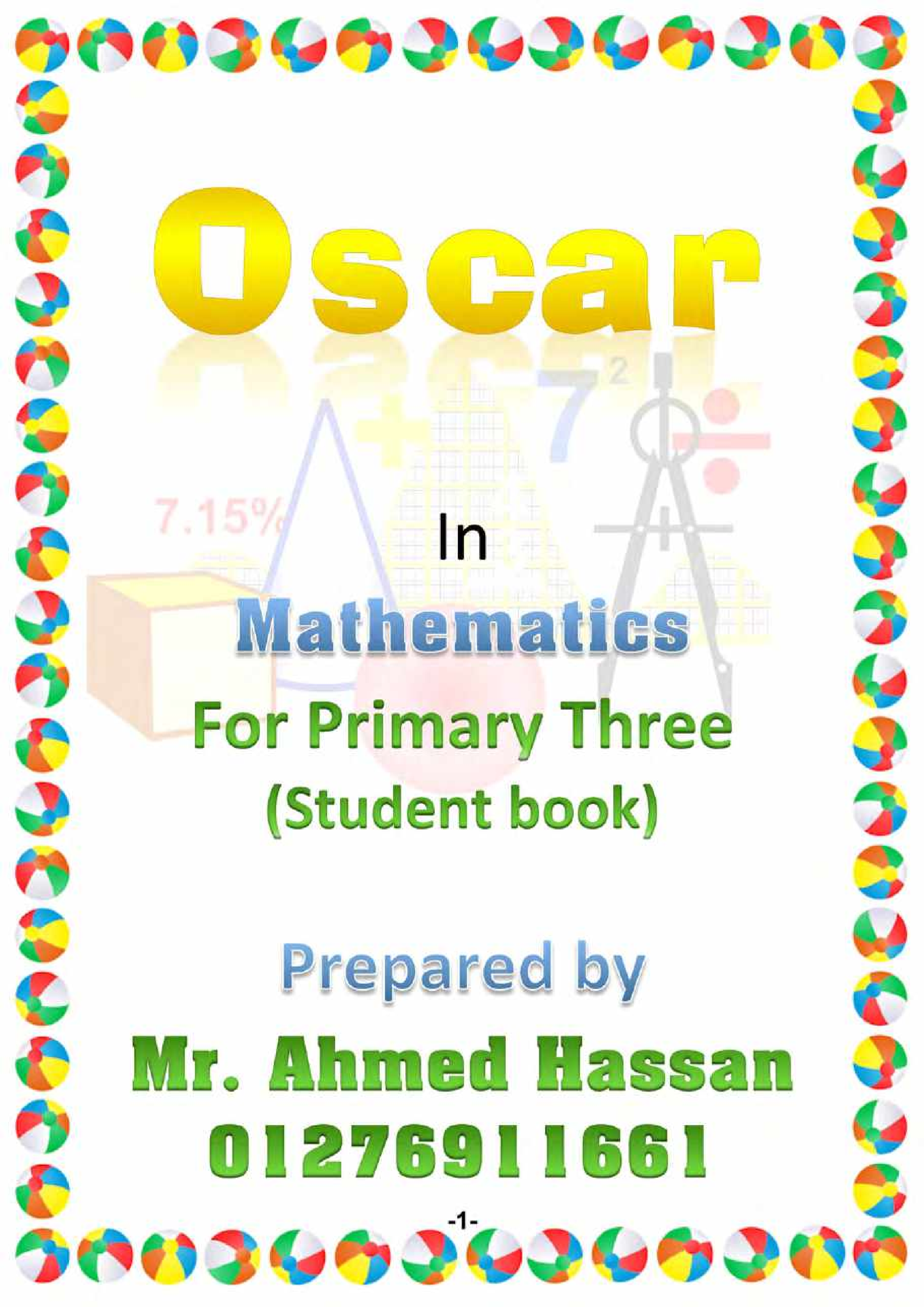


Oscar

In

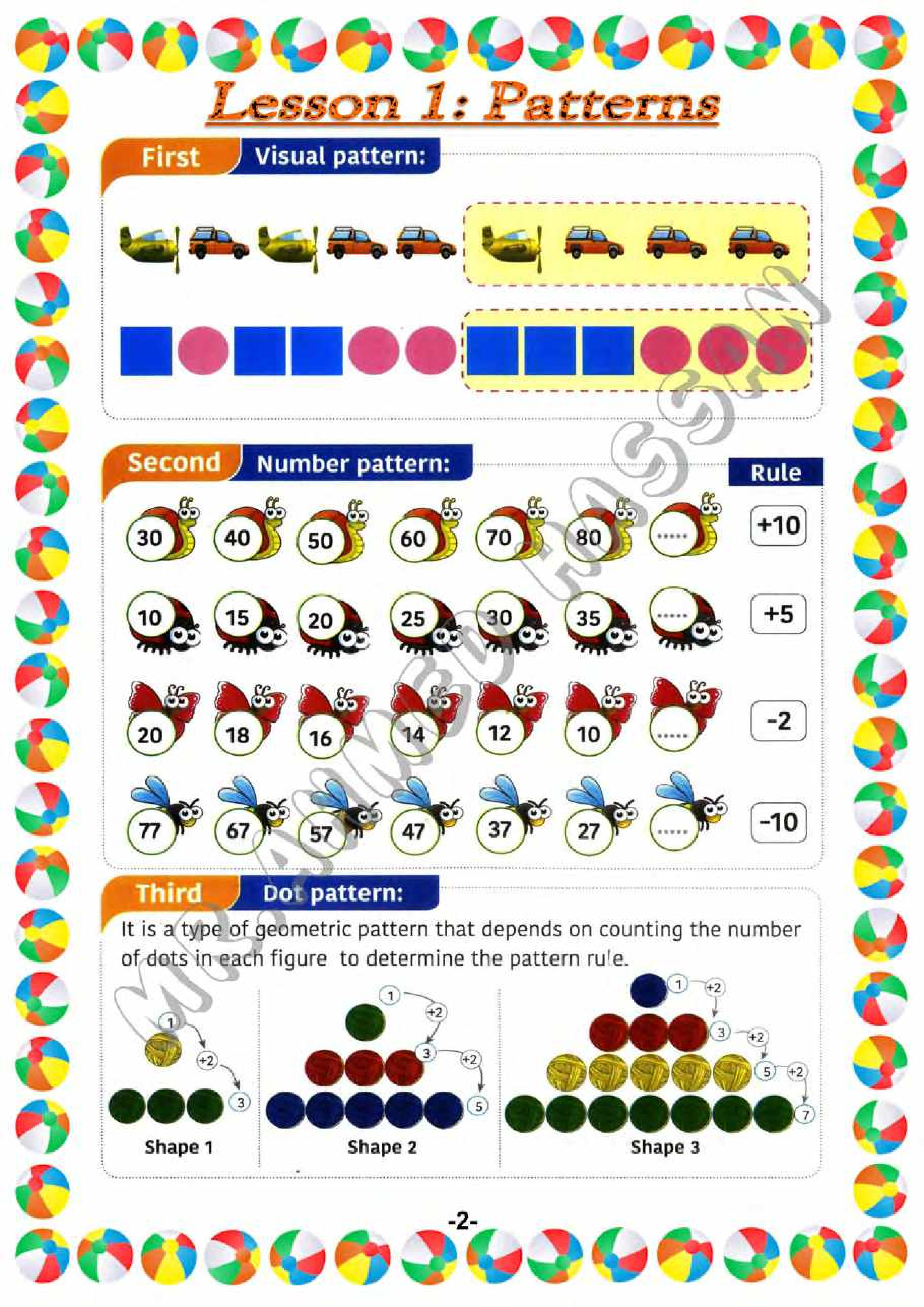
Mathematics

For Primary Three
(Student book)

Prepared by

Mr. Ahmed Hassan

01276911661



Lesson 1: Patterns

First Visual pattern:

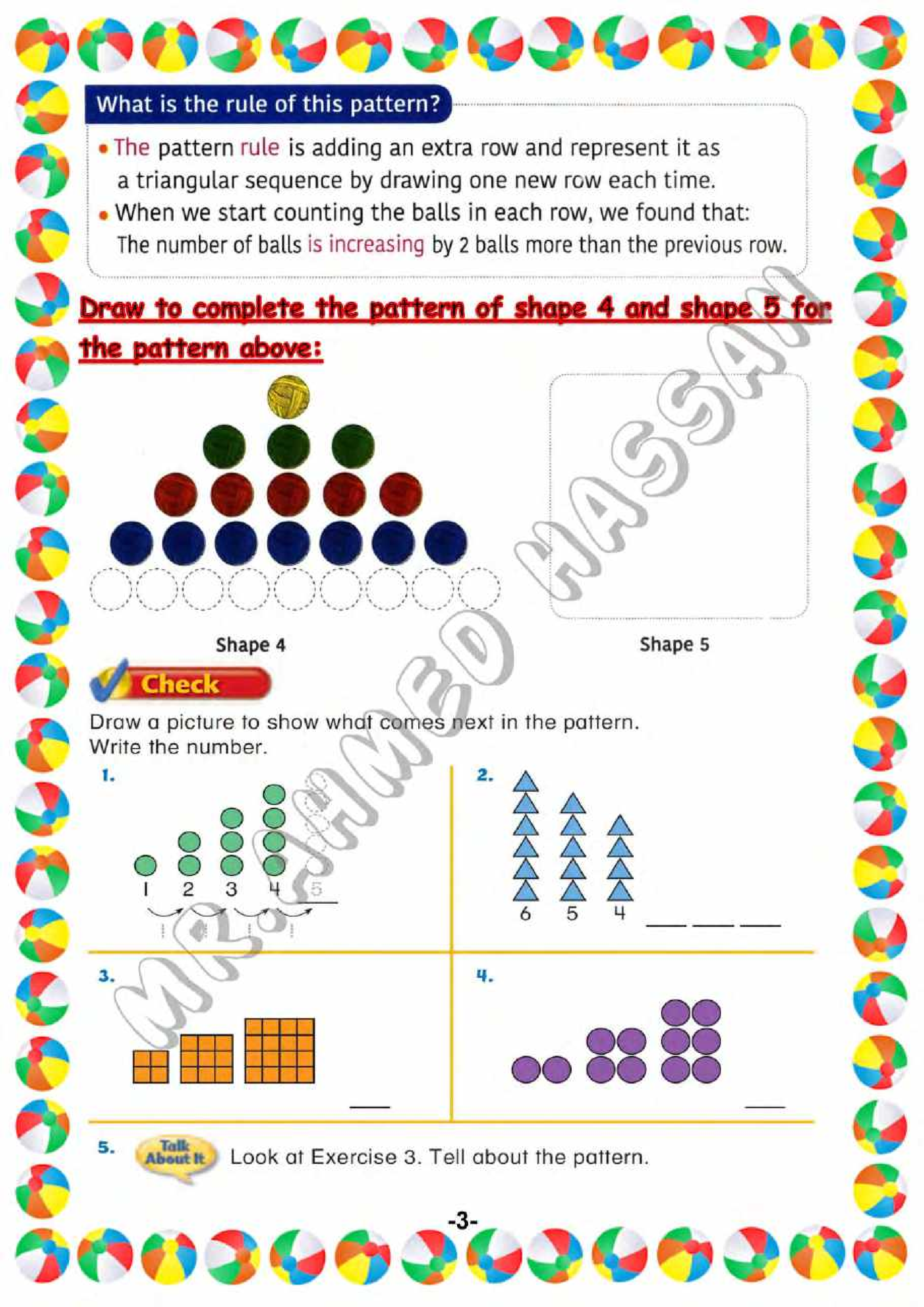
Second Number pattern:

							Rule
30	40	50	60	70	80	......	+10
10	15	20	25	30	35	......	+5
20	18	16	14	12	10	......	-2
77	67	57	47	37	27	......	-10

Third Dot pattern:

It is a type of geometric pattern that depends on counting the number of dots in each figure to determine the pattern rule.

Shape 1 Shape 2 Shape 3



What is the rule of this pattern?

- The pattern rule is adding an extra row and represent it as a triangular sequence by drawing one new row each time.
- When we start counting the balls in each row, we found that: The number of balls is increasing by 2 balls more than the previous row.

Draw to complete the pattern of shape 4 and shape 5 for the pattern above:

Shape 4

Shape 5

Check

Draw a picture to show what comes next in the pattern.
Write the number.

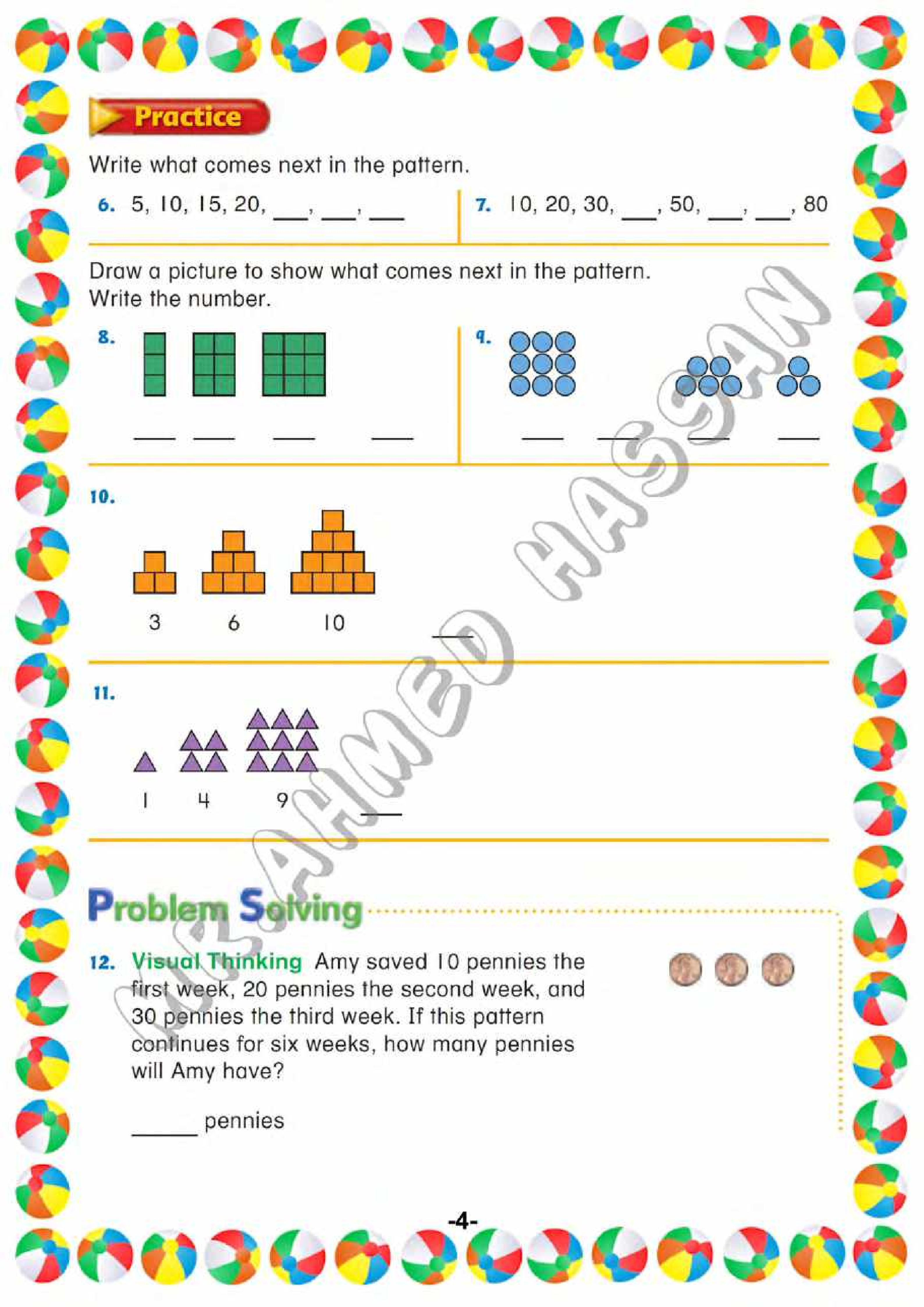
1\. 1 2 3 4 ___

2\. 6 5 4 ___ ___ ___

3\. ___

4\. ___

5\. Talk About It Look at Exercise 3. Tell about the pattern.



Practice

Write what comes next in the pattern.

6. 5, 10, 15, 20, ___, ___, ___

7. 10, 20, 30, ___, 50, ___, ___, 80

Draw a picture to show what comes next in the pattern.
Write the number.

8. ___ ___ ___ ___

9. ___ ___ ___ ___

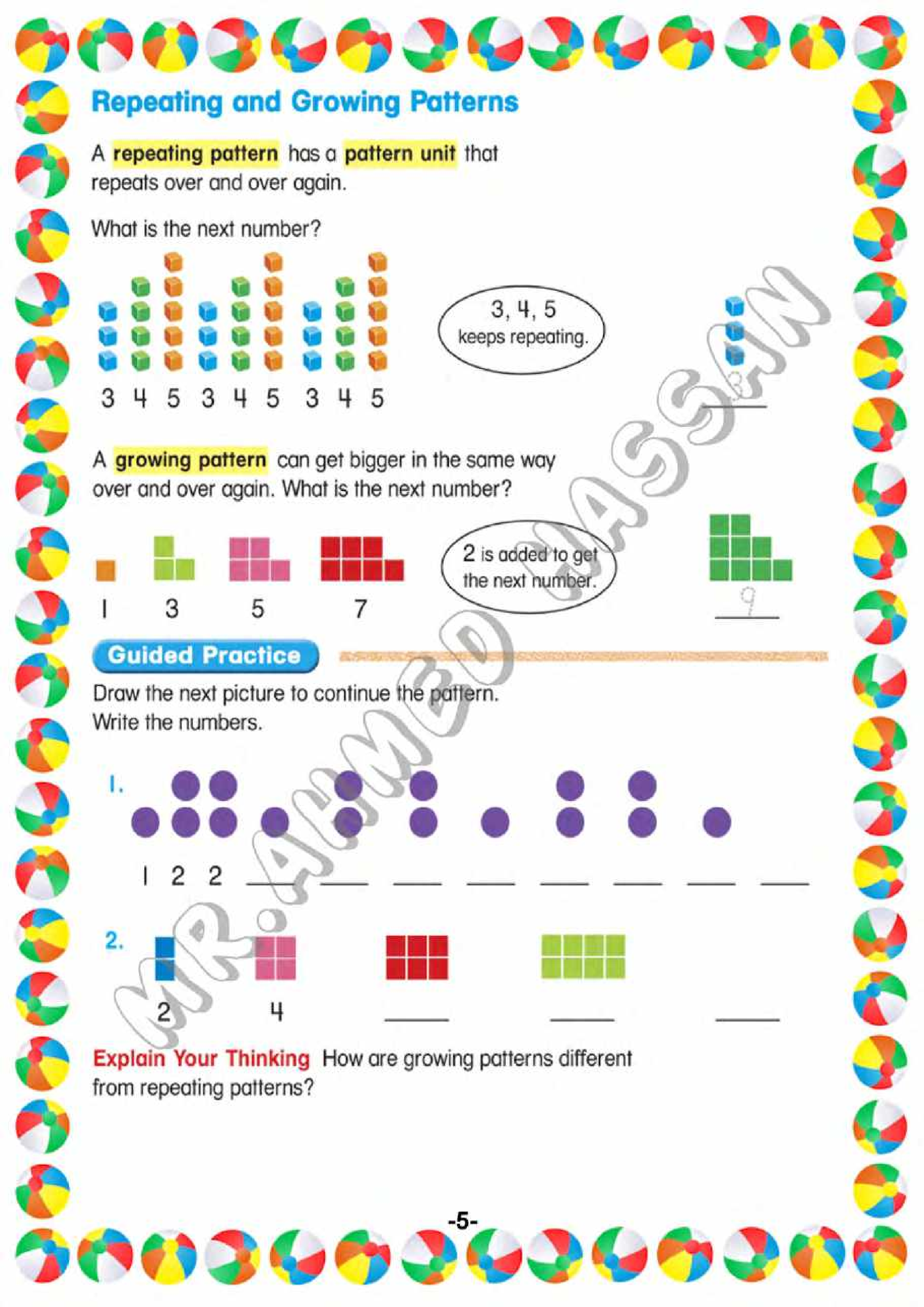
10. 3 6 10 ___

11. 1 4 9 ___

Problem Solving

12. **Visual Thinking** Amy saved 10 pennies the first week, 20 pennies the second week, and 30 pennies the third week. If this pattern continues for six weeks, how many pennies will Amy have?

_____ pennies



Repeating and Growing Patterns

A **repeating pattern** has a **pattern unit** that repeats over and over again.

What is the next number?

A **growing pattern** can get bigger in the same way over and over again. What is the next number?

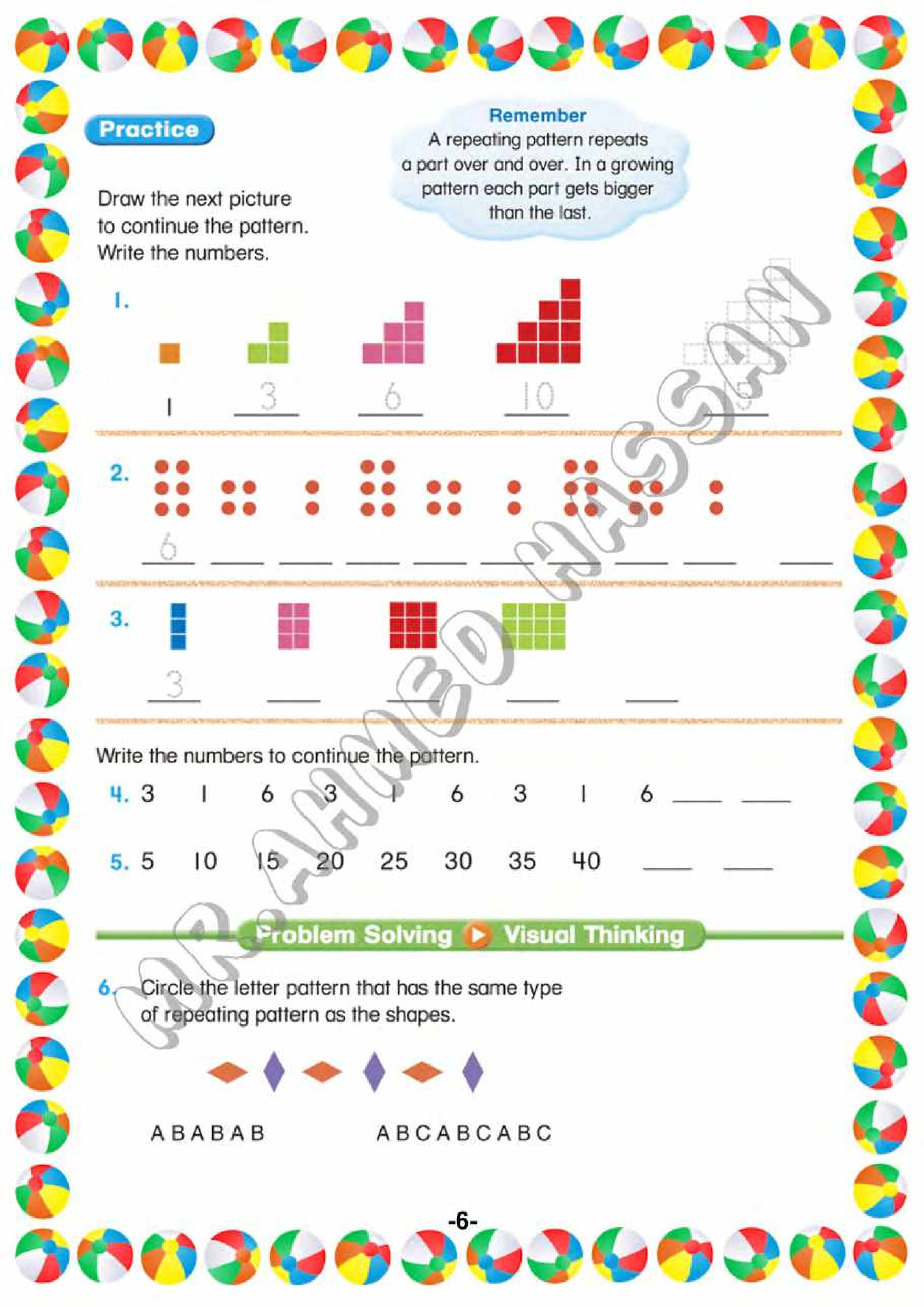
Guided Practice

Draw the next picture to continue the pattern. Write the numbers.

1\.

2\.

Explain Your Thinking How are growing patterns different from repeating patterns?



Practice

Remember
A repeating pattern repeats a part over and over. In a growing pattern each part gets bigger than the last.

Draw the next picture to continue the pattern. Write the numbers.

1. 1 ___3___ ___6___ ___10___ ___15___

2. ___6___ ____ ____ ____ ____ ____ ____ ____ ____ ____

3. ___3___ ____ ____ ____ ____

Write the numbers to continue the pattern.

4. 3 1 6 3 1 6 3 1 6 ____ ____

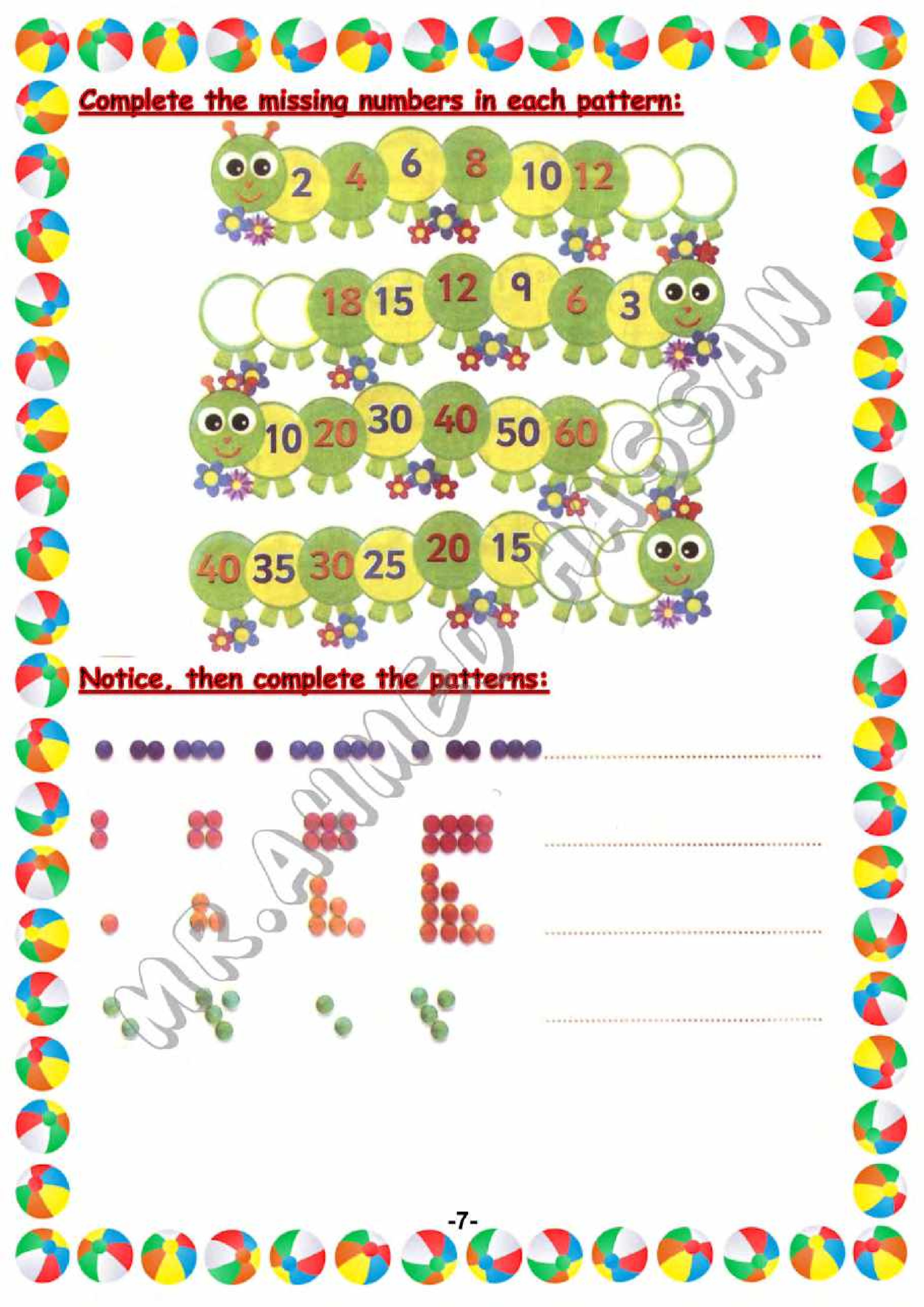
5. 5 10 15 20 25 30 35 40 ____ ____

Problem Solving ▶ Visual Thinking

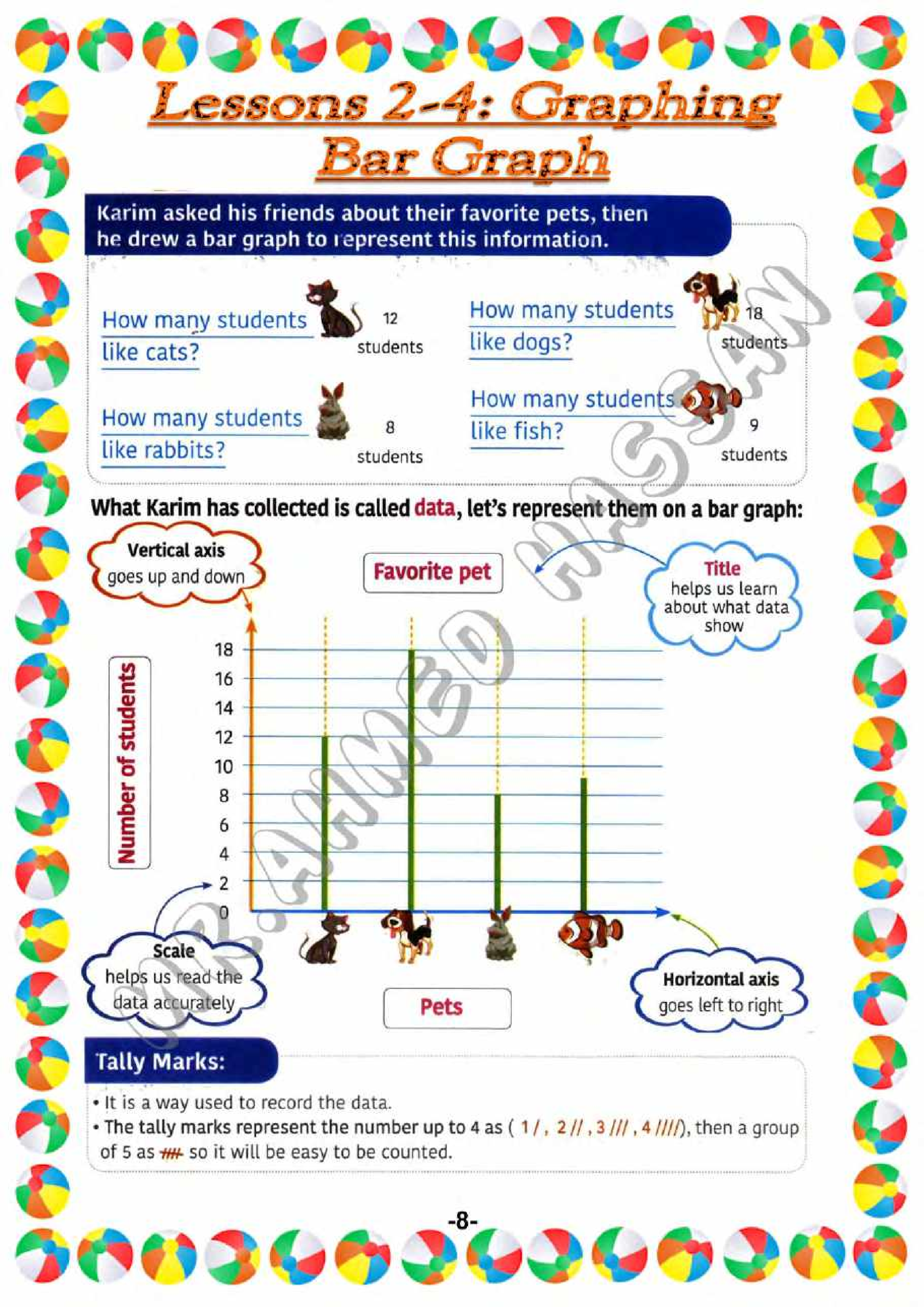
6. Circle the letter pattern that has the same type of repeating pattern as the shapes.

A B A B A B A B C A B C A B C

Complete the missing numbers in each pattern:



Notice, then complete the patterns:



Lessons 2-4: Graphing
Bar Graph

Karim asked his friends about their favorite pets, then he drew a bar graph to represent this information.

How many students like cats? 12 students

How many students like dogs? 18 students

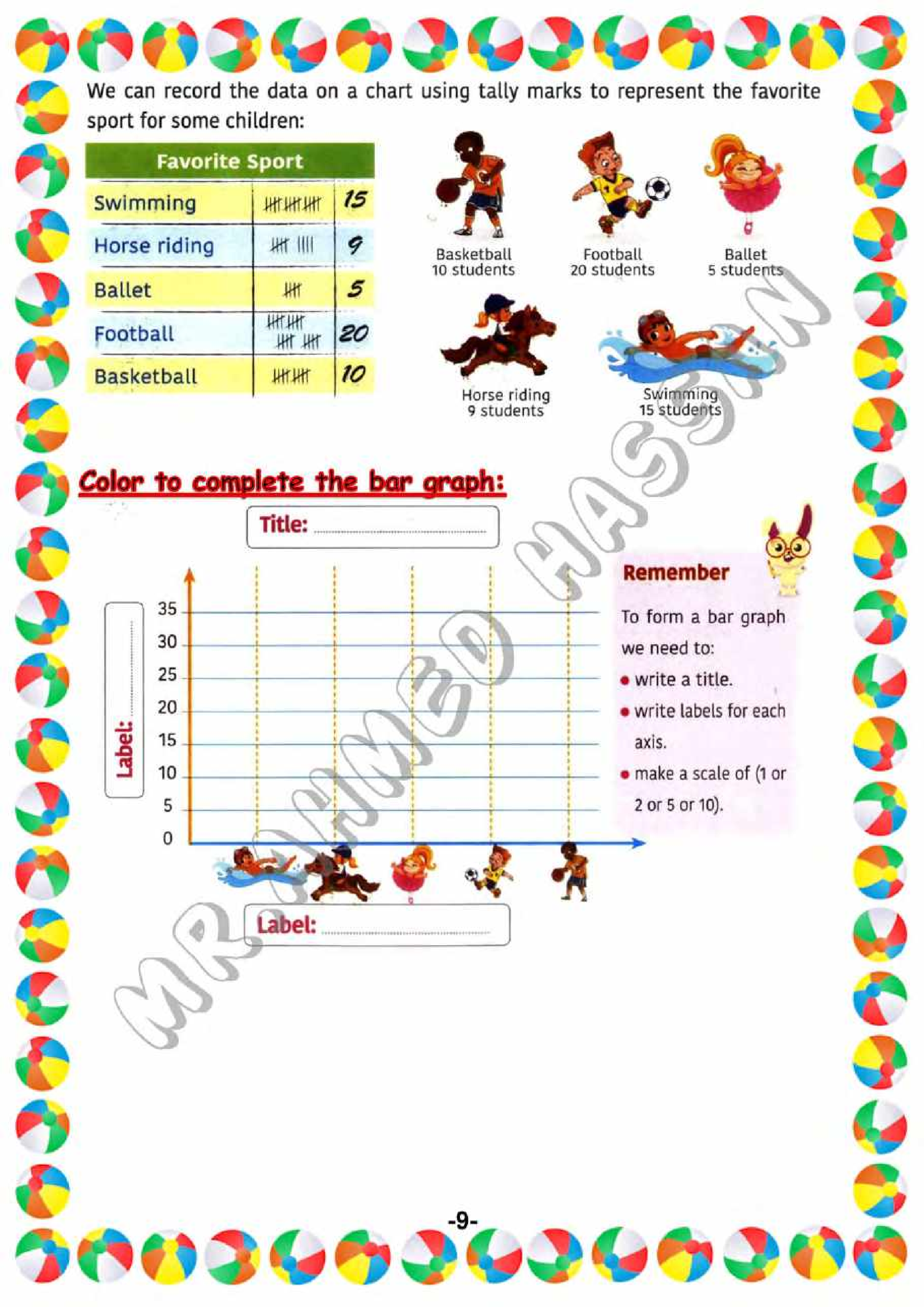
How many students like rabbits? 8 students

How many students like fish? 9 students

What Karim has collected is called data, let's represent them on a bar graph:

Tally Marks:

- It is a way used to record the data.
- The tally marks represent the number up to 4 as (1 / , 2 // , 3 /// , 4 ////), then a group of 5 as ~~////~~ so it will be easy to be counted.



We can record the data on a chart using tally marks to represent the favorite sport for some children:

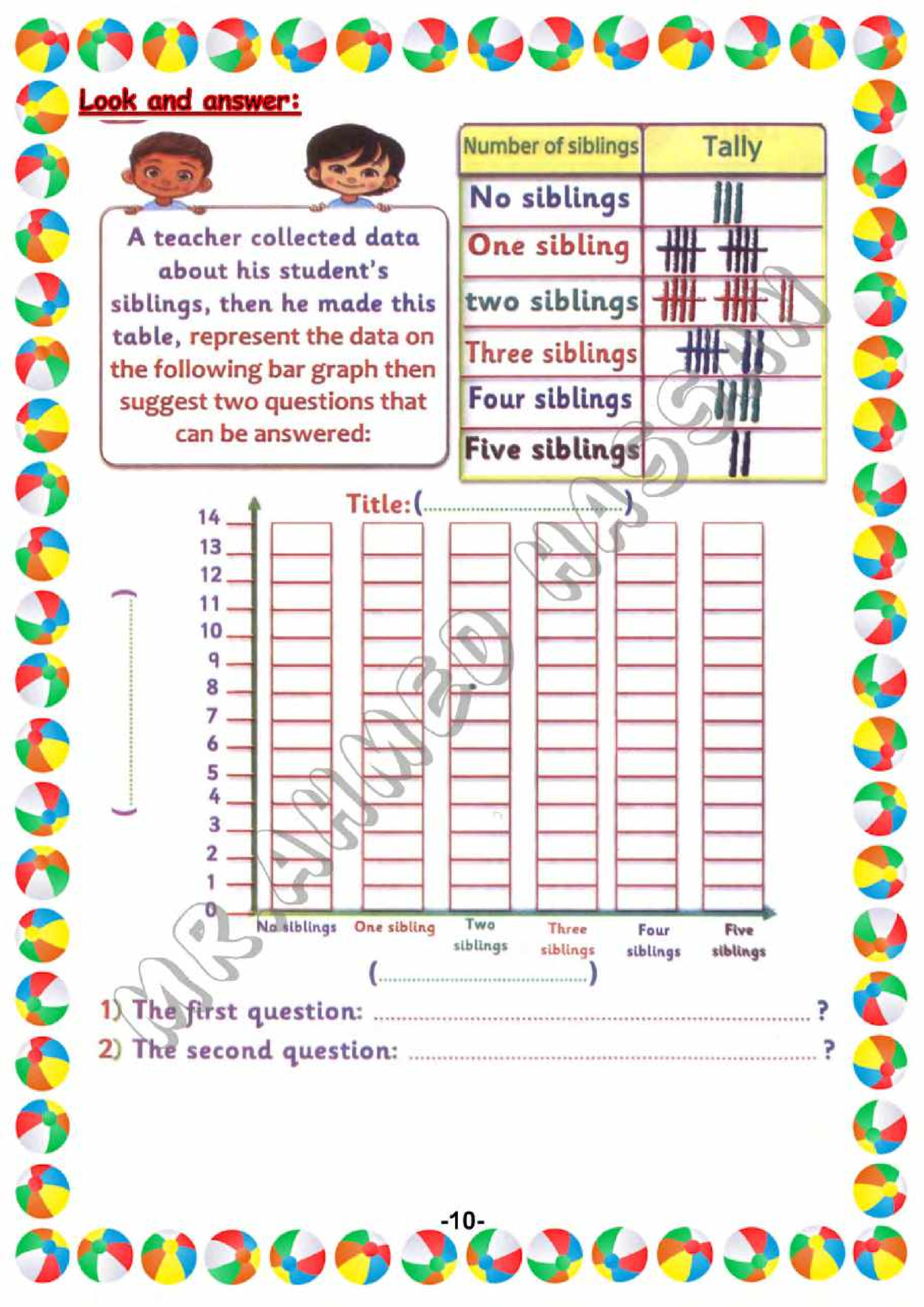
Favorite Sport		
Swimming	𝍸𝍸𝍸	15
Horse riding	𝍸 ||||	9
Ballet	𝍸	5
Football	𝍸𝍸 𝍸𝍸	20
Basketball	𝍸𝍸	10

Color to complete the bar graph:

Remember

To form a bar graph we need to:

- write a title.
- write labels for each axis.
- make a scale of (1 or 2 or 5 or 10).



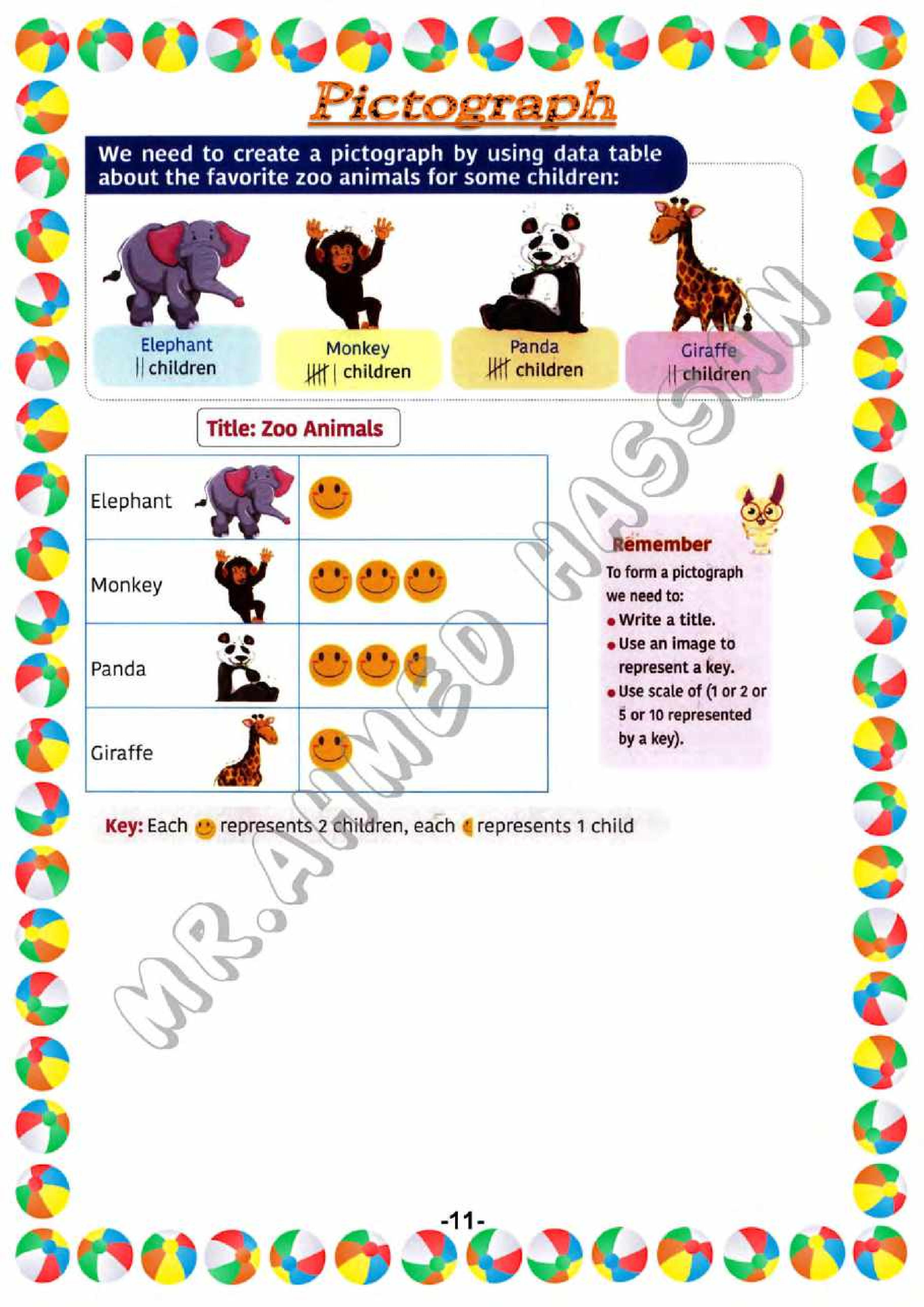
Look and answer:

A teacher collected data about his student's siblings, then he made this table, represent the data on the following bar graph then suggest two questions that can be answered:

Number of siblings	Tally
No siblings	|||
One sibling	卌 卌
two siblings	卌 卌 ||
Three siblings	卌 ||
Four siblings	||||
Five siblings	||

1) The first question: ....?

2) The second question: ....?



Pictograph

We need to create a pictograph by using data table about the favorite zoo animals for some children:

Elephant	Monkey	Panda	Giraffe
|| children	~~||||~~ | children	~~||||~~ children	|| children

Title: Zoo Animals

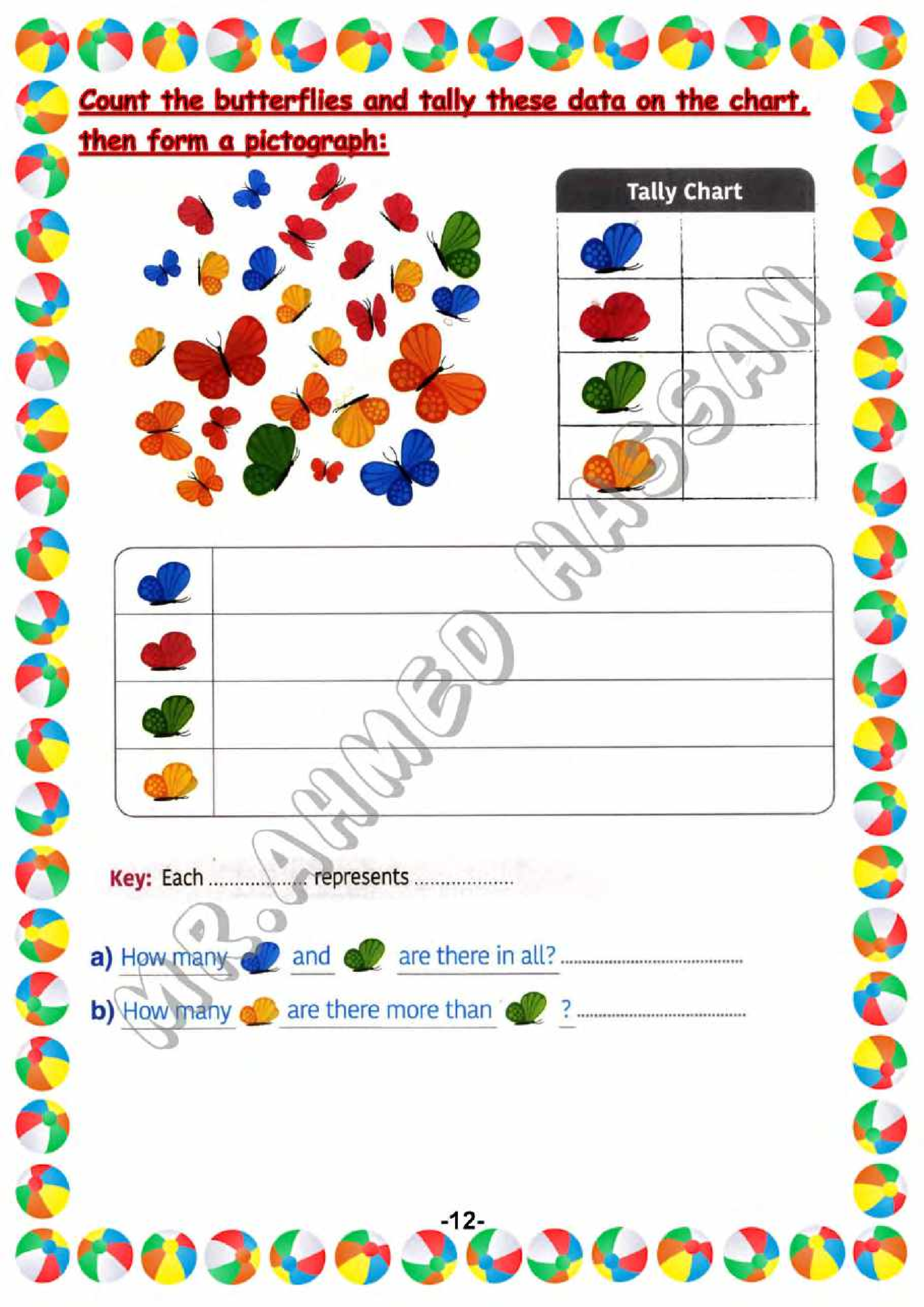
Elephant	😊
Monkey	😊 😊 😊
Panda	😊 😊 ◐
Giraffe	😊

Key: Each 😊 represents 2 children, each ◐ represents 1 child

Remember

To form a pictograph we need to:

- Write a title.
- Use an image to represent a key.
- Use scale of (1 or 2 or 5 or 10 represented by a key).



Count the butterflies and tally these data on the chart, then form a pictograph:

Tally Chart	
(blue)	
(red)	
(green)	
(orange)	

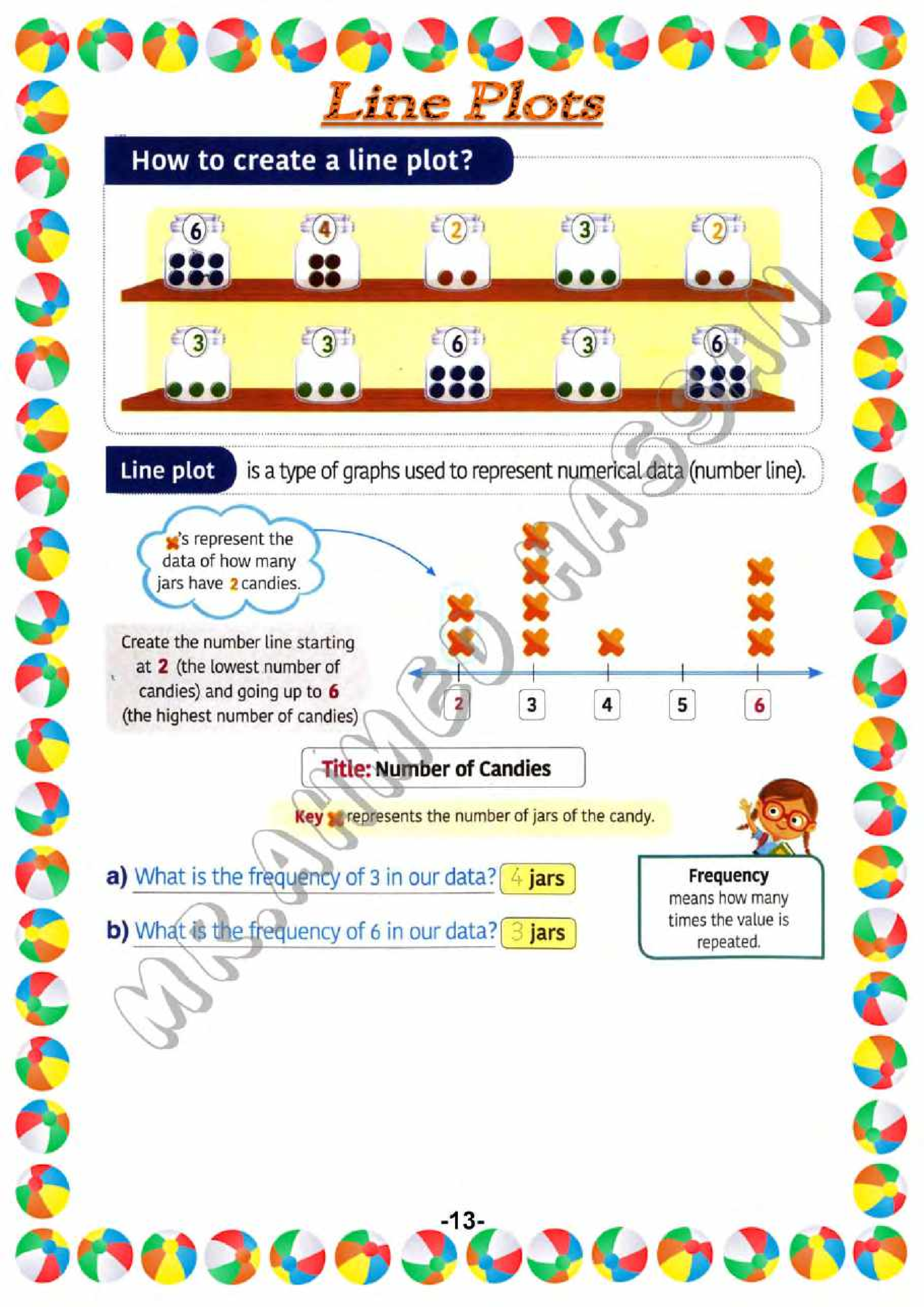
Key: Each .... represents ....

a) How many and are there in all? ....

b) How many are there more than ? ....

Line Plots

How to create a line plot?



Line plot is a type of graphs used to represent numerical data (number line).

Create the number line starting at **2** (the lowest number of candies) and going up to **6** (the highest number of candies)

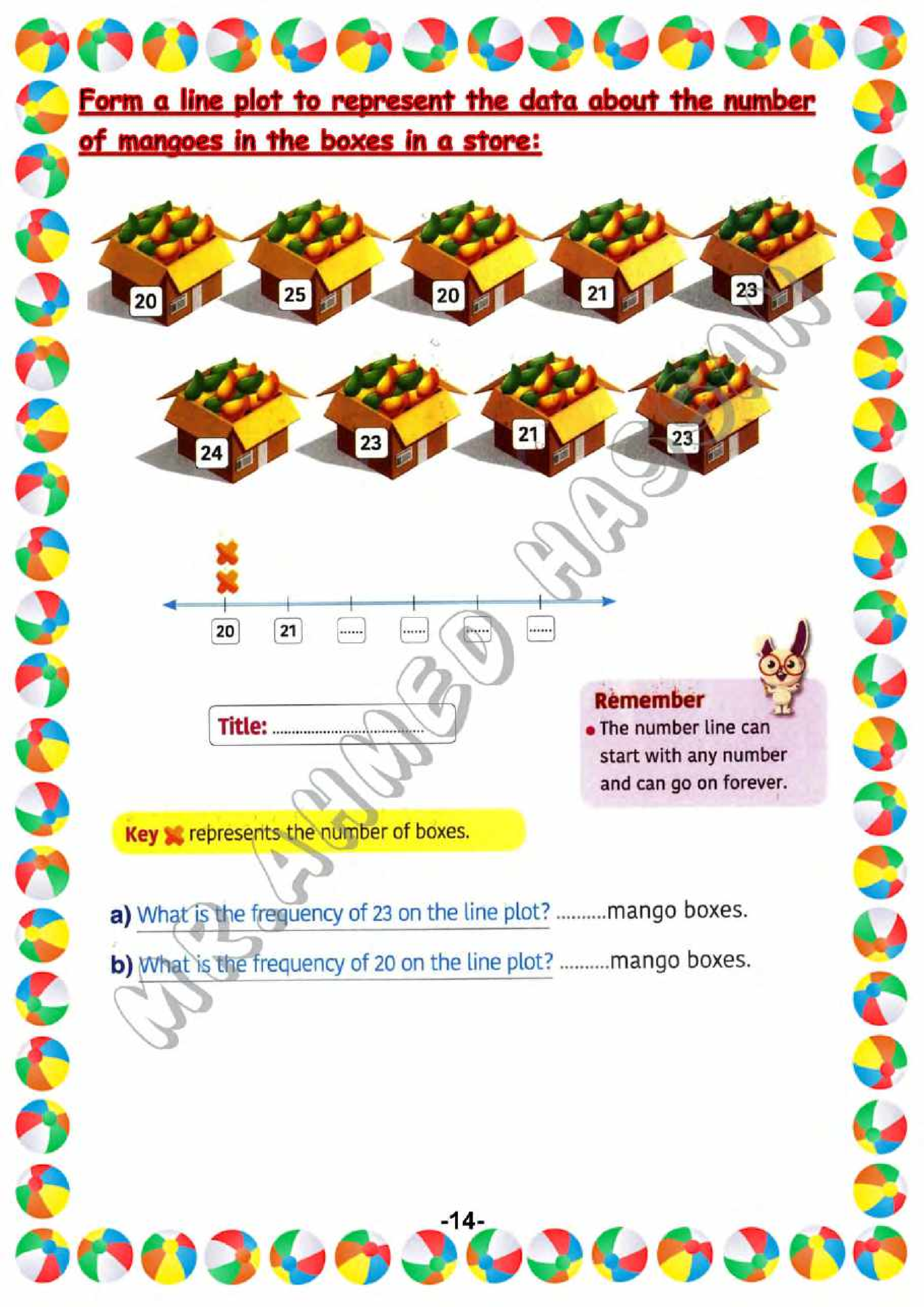
Title: Number of Candies

Key represents the number of jars of the candy.

a) What is the frequency of 3 in our data? 4 **jars**

b) What is the frequency of 6 in our data? 3 **jars**

Frequency means how many times the value is repeated.



Form a line plot to represent the data about the number of mangoes in the boxes in a store:

Title: ....

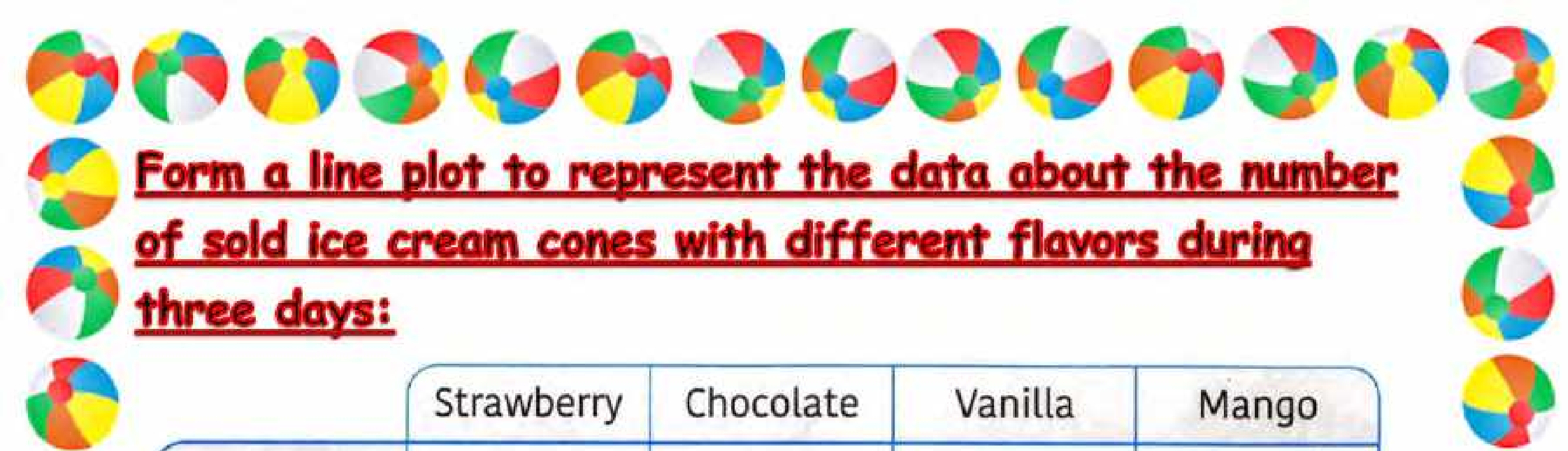
Remember

- The number line can start with any number and can go on forever.

Key ✖ represents the number of boxes.

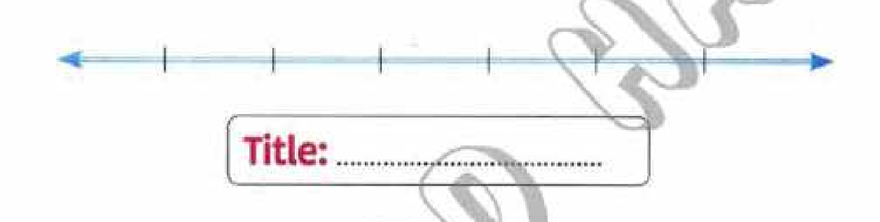
a) What is the frequency of 23 on the line plot? ....mango boxes.

b) What is the frequency of 20 on the line plot? ....mango boxes.



Form a line plot to represent the data about the number of sold ice cream cones with different flavors during three days:

	Strawberry	Chocolate	Vanilla	Mango
1st day	10	14	12	13
2nd day	15	12	14	15
3rd day	11	14	13	12



Title: ....

Key ✖ represents ....

a) What is the frequency of 11 on the line plot? .... ice cream cones.

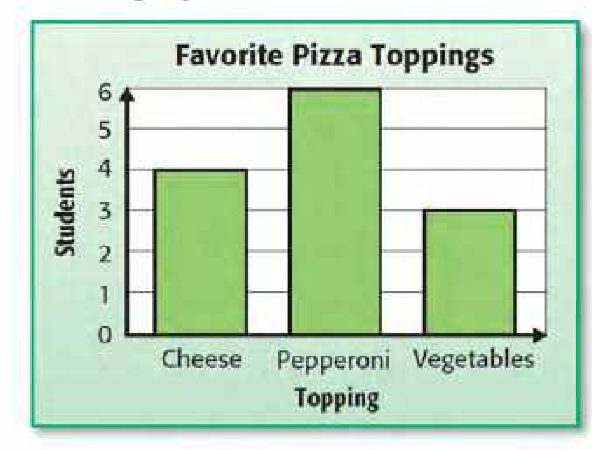
b) What is the frequency of 14 on the line plot? .... ice cream cones.



1. Make a horizontal bar graph.

Weekend Activities	
Activity	**Time (hours)**
Swim	2
Shop	4
TV	5
Jog	3

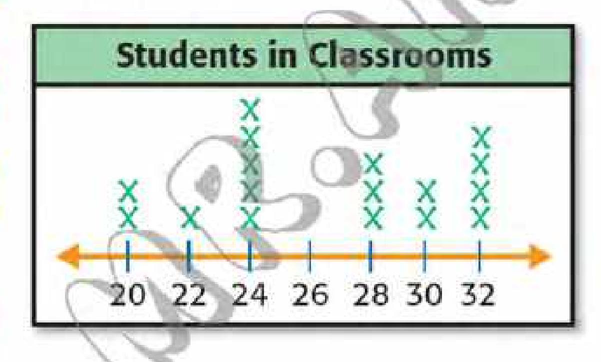
Use the graph.



2. How many more students like pepperoni than cheese?

3. Find the total number of students.

4. Use the line plot. What is the difference between the most and least number of students in a classroom?



5. STANDARDS PRACTICE Which statement is true?

Years Teaching

1 5 7 10 20 21

A All teachers have been teaching 10 years, except one.

B All have taught 7 years or more.

C Most of the teachers have taught 7 years or more.

D No one has taught 21 years.

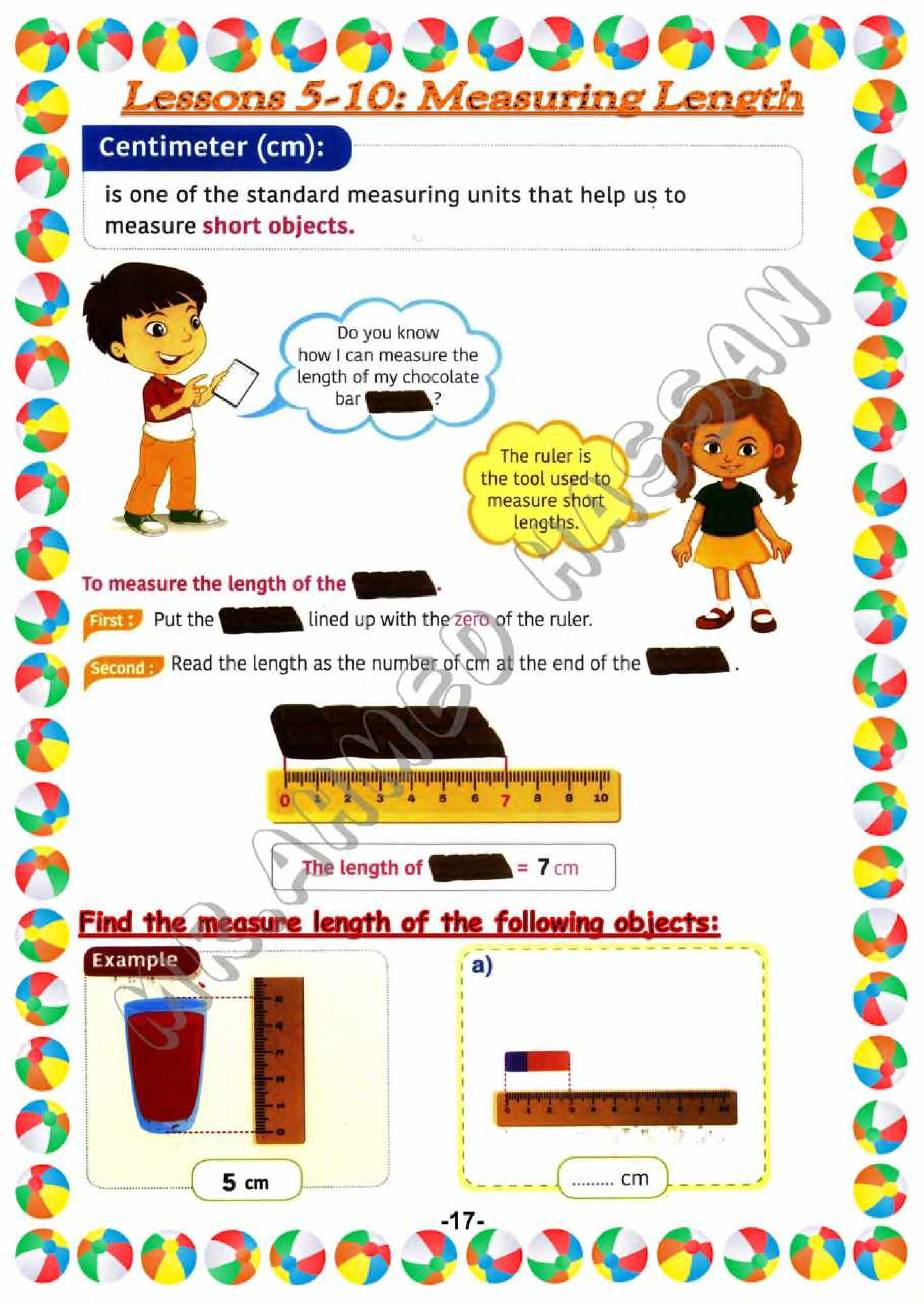
6. Display the data in a line plot.

Favorite Place to Read a Book	
Place	**Students**
Bed	~~||||~~ ||||
Outside	|||
School	~~||||~~ |||
Library	||||

Lessons 5-10: Measuring Length

Centimeter (cm):

is one of the standard measuring units that help us to measure **short objects.**



To measure the length of the .

First : Put the lined up with the zero of the ruler.

Second : Read the length as the number of cm at the end of the .

The length of = **7** cm

Find the measure length of the following objects:

Example

5 cm

a)

.... cm



b) .... cm

c) .... cm

d) .... cm

e) .... cm

Measure the length of each object, then find the longest and the shortest:

a) ____ cm

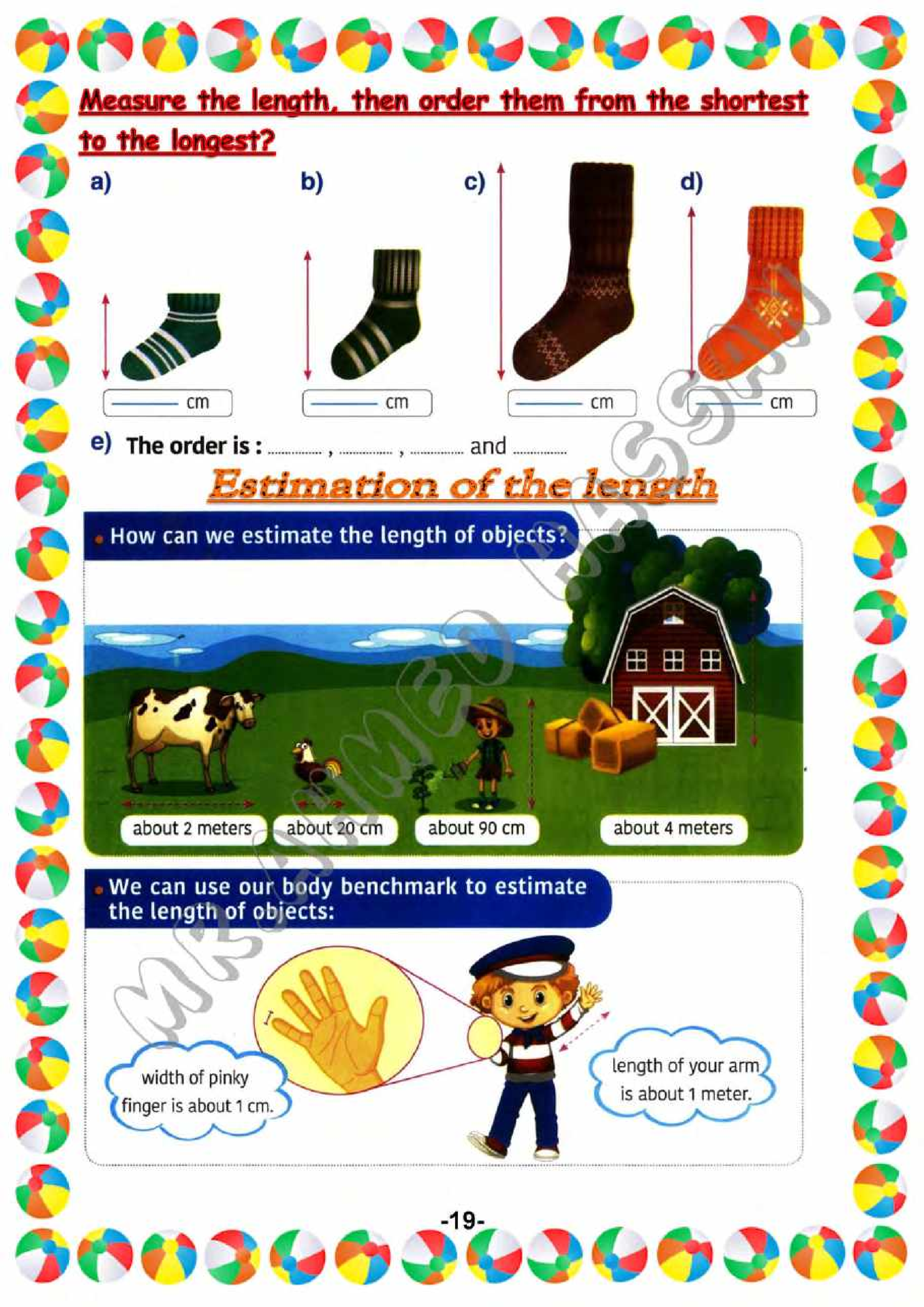
b) ____ cm

c) ____ cm

d) ____ cm

e) The longest length = ... cm

f) The shortest length = ... cm



Measure the length, then order them from the shortest to the longest?

a) ______ cm

b) ______ cm

c) ______ cm

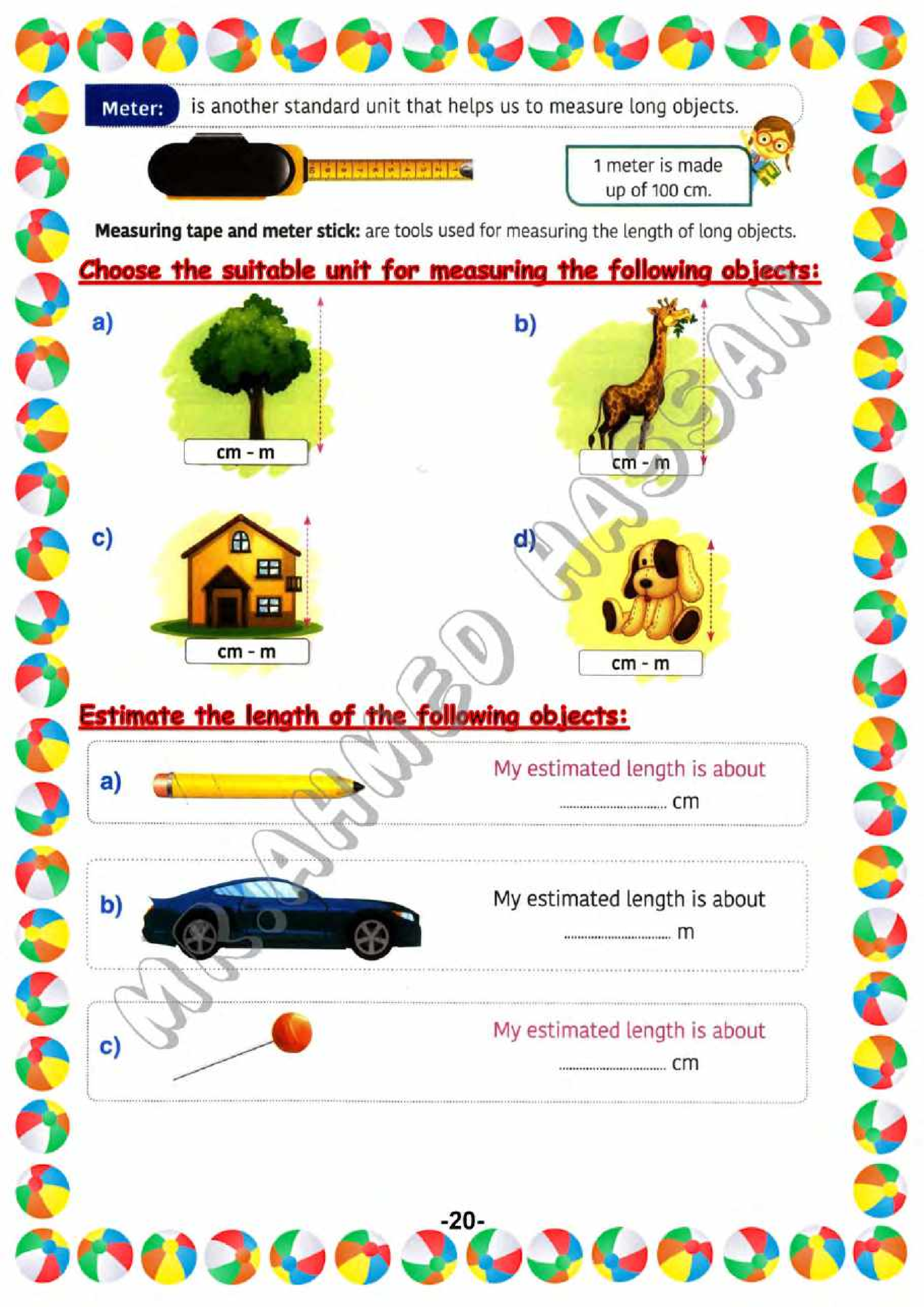
d) ______ cm

e) **The order is :** .... , ... , ... and ....

Estimation of the length

- How can we estimate the length of objects?

- We can use our body benchmark to estimate the length of objects:



Meter: is another standard unit that helps us to measure long objects.

1 meter is made up of 100 cm.

Measuring tape and meter stick: are tools used for measuring the length of long objects.

Choose the suitable unit for measuring the following objects:

a) cm - m

b) cm - m

c) cm - m

d) cm - m

Estimate the length of the following objects:

a) My estimated length is about .... cm

b) My estimated length is about .... m

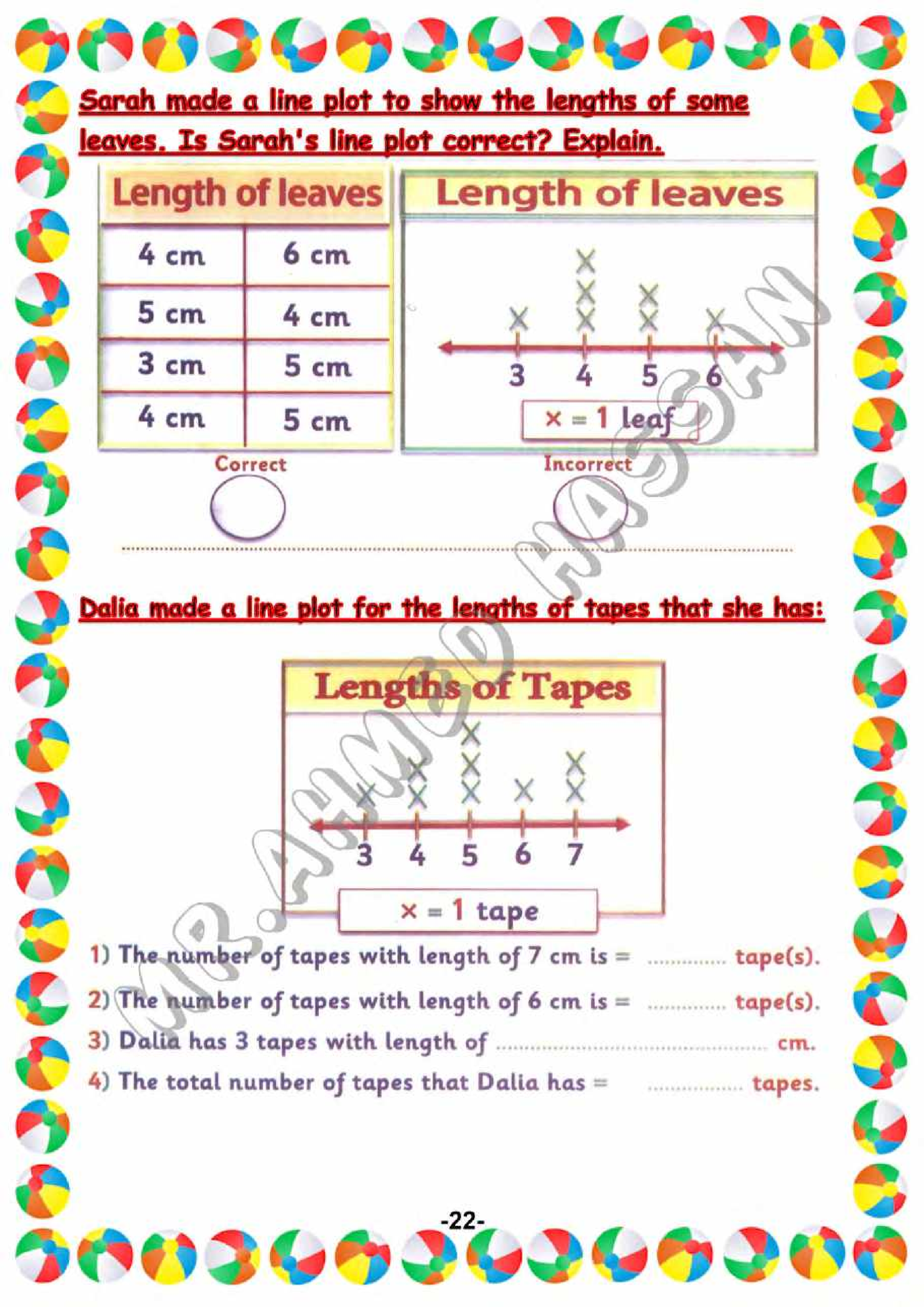
c) My estimated length is about .... cm

We can record different lengths and represent the data on a line plot:



a) What is the frequency of the longest length you have recorded on the line plot? 25 cm recorded 2 times.

b) What is the frequency of the shortest length you have recorded on the line plot? 15 cm recorded 2 times.



Sarah made a line plot to show the lengths of some leaves. Is Sarah's line plot correct? Explain.

Length of leaves	
4 cm	6 cm
5 cm	4 cm
3 cm	5 cm
4 cm	5 cm

Correct ◯ Incorrect ◯

....

Dalia made a line plot for the lengths of tapes that she has:

1) The number of tapes with length of 7 cm is = ... tape(s).

2) The number of tapes with length of 6 cm is = ... tape(s).

3) Dalia has 3 tapes with length of .... cm.

4) The total number of tapes that Dalia has = ... tapes.



Millimeter:

is a standard measurning unit that helps us to measure tiny (very small) objects.

Notes:
Millimeter is smaller than centimeter.
It is the length between two small dashes on the ruler.

The length in (cm)	The length in (mm)
3 cm	30 mm

The length in (cm)	The length in (mm)
2 cm	20 mm

We notice that:

3 cm = 30 mm

2 cm = 20 mm

That means each 1 cm consists of 10 mm (1 cm = 10 mm).



Measure the length, then choose the correct answer:

a) 20 mm | 3 cm | 4 cm

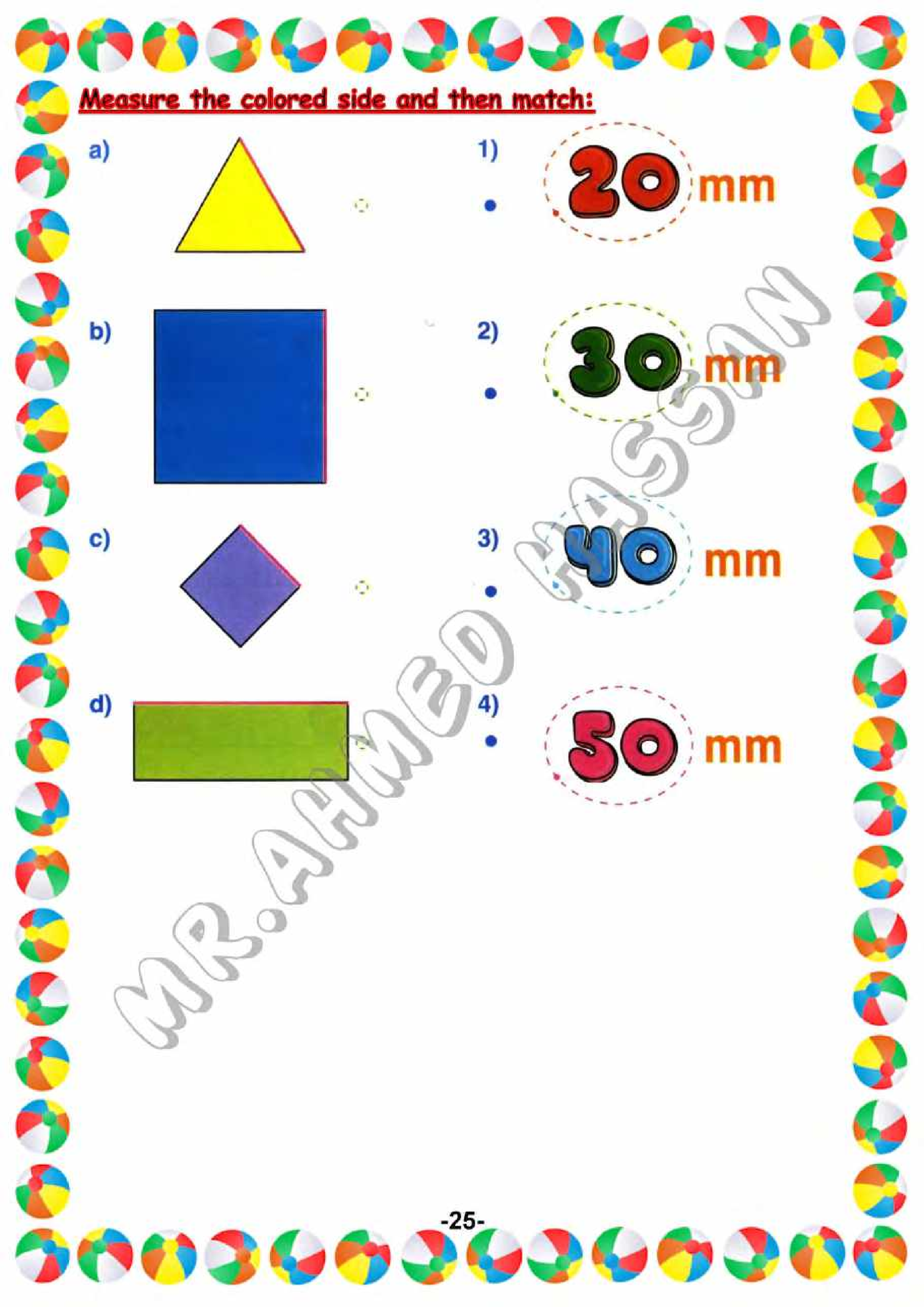
b) 2 cm | 4 cm | 60 mm

c) 4 cm | 5 cm | 60 mm

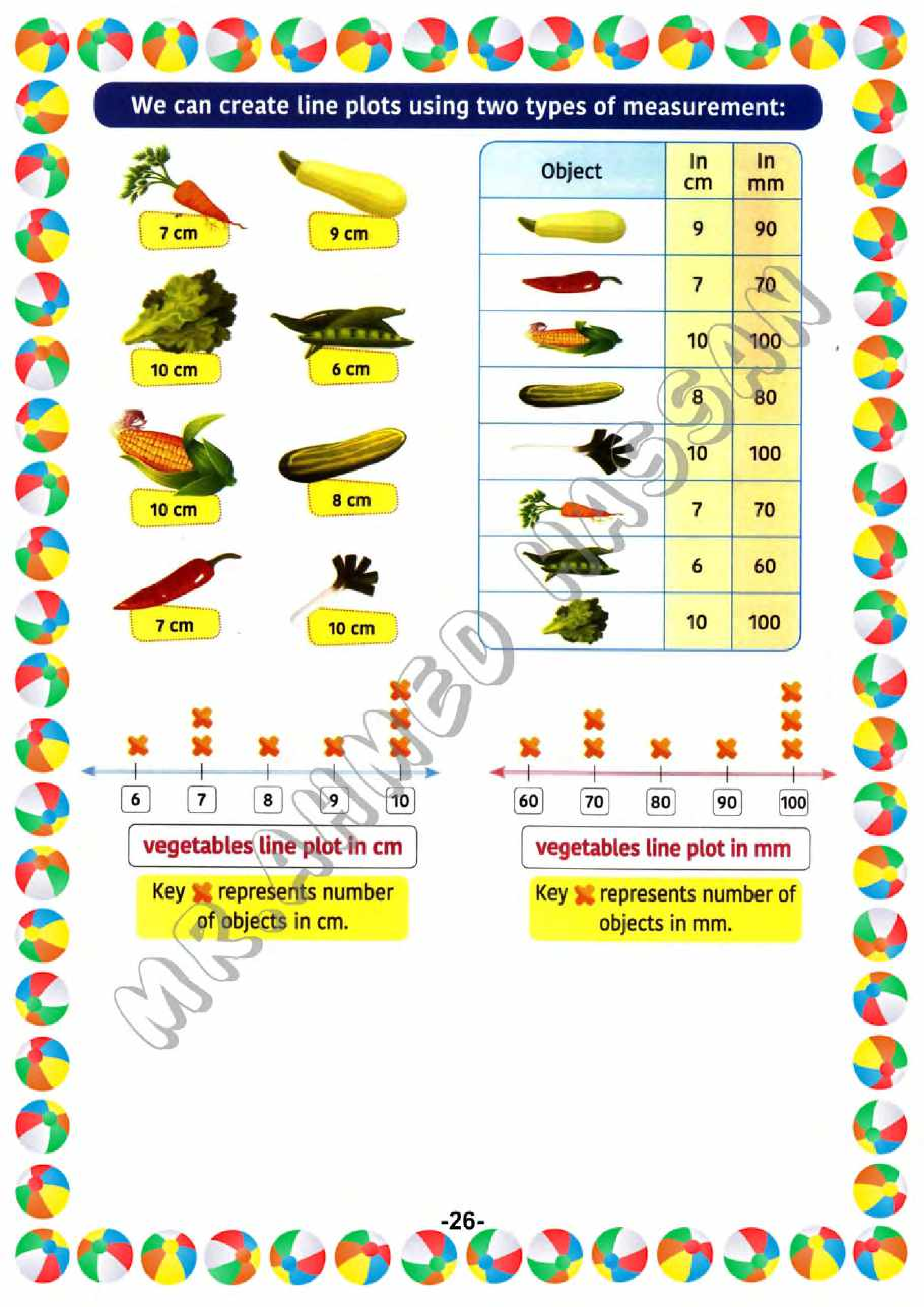
d) 20 mm | 50 mm | 3 cm

e) 7 cm | 80 mm | 5 cm

f) 2 cm | 4 cm | 60 mm



Measure the colored side and then match:
a)
b)
c)
d)
1)
20 mm
2)
30 mm
3)
40 mm
4)
50 mm



We can create line plots using two types of measurement:

Object	In cm	In mm
	9	90
	7	70
	10	100
	8	80
	10	100
	7	70
	6	60
	10	100

vegetables line plot in cm

Key ✖ represents number of objects in cm.

vegetables line plot in mm

Key ✖ represents number of objects in mm.

Record the lengths in mm, then form the two line plots:



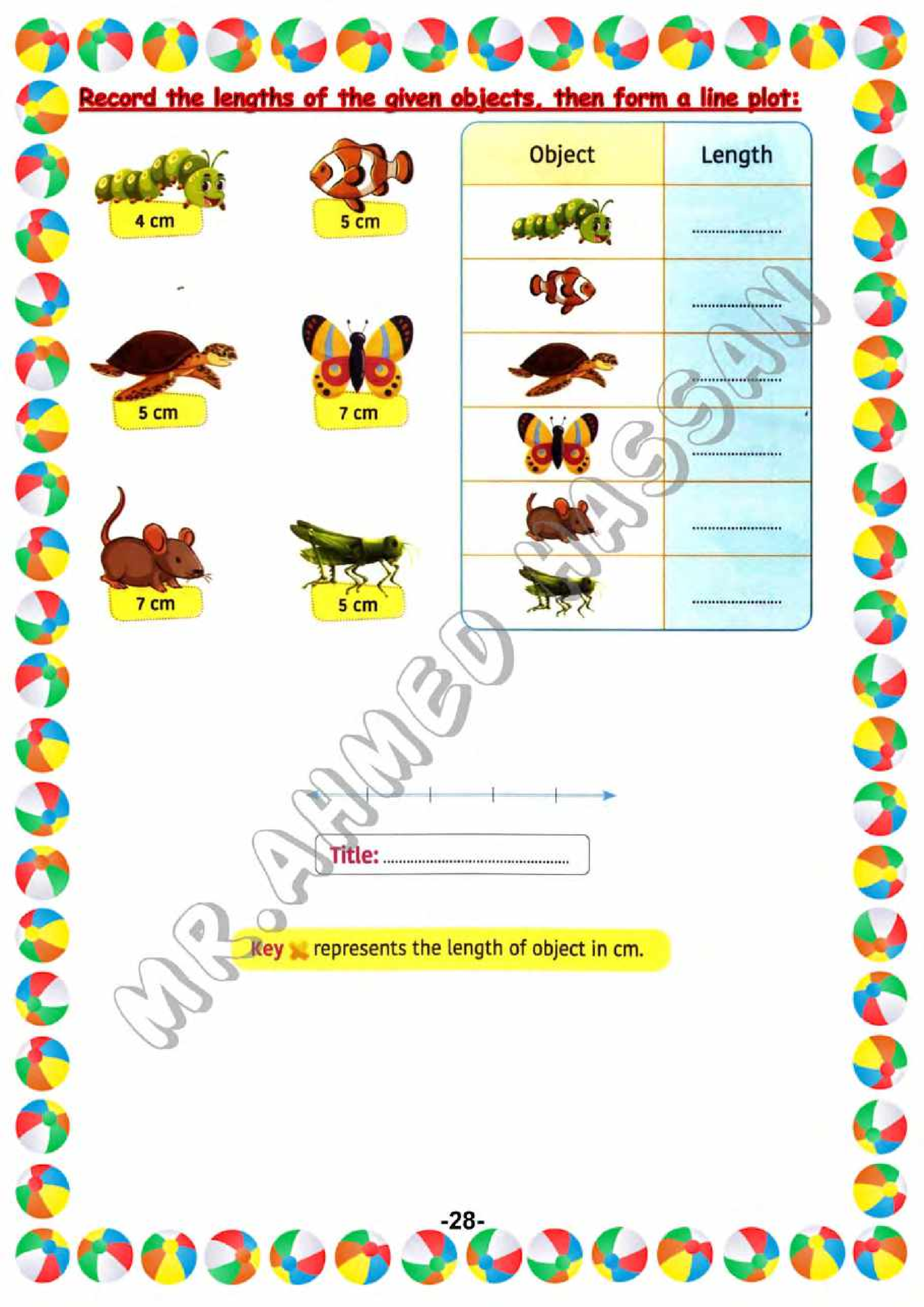
Object	In cm	In mm
calculator	9	....
pencil	7	....
eraser	4	....
scissors	8	....
pen	9	....
whale	7	....
color pencils	9	....
highlighter	5	....
sharpener	4	....

Title: ....

Key ✖ represents number of objects in cm.

Title: ....

Key ✖ represents number of objects in mm.



Record the lengths of the given objects, then form a line plot:

4 cm

5 cm

5 cm

7 cm

7 cm

5 cm

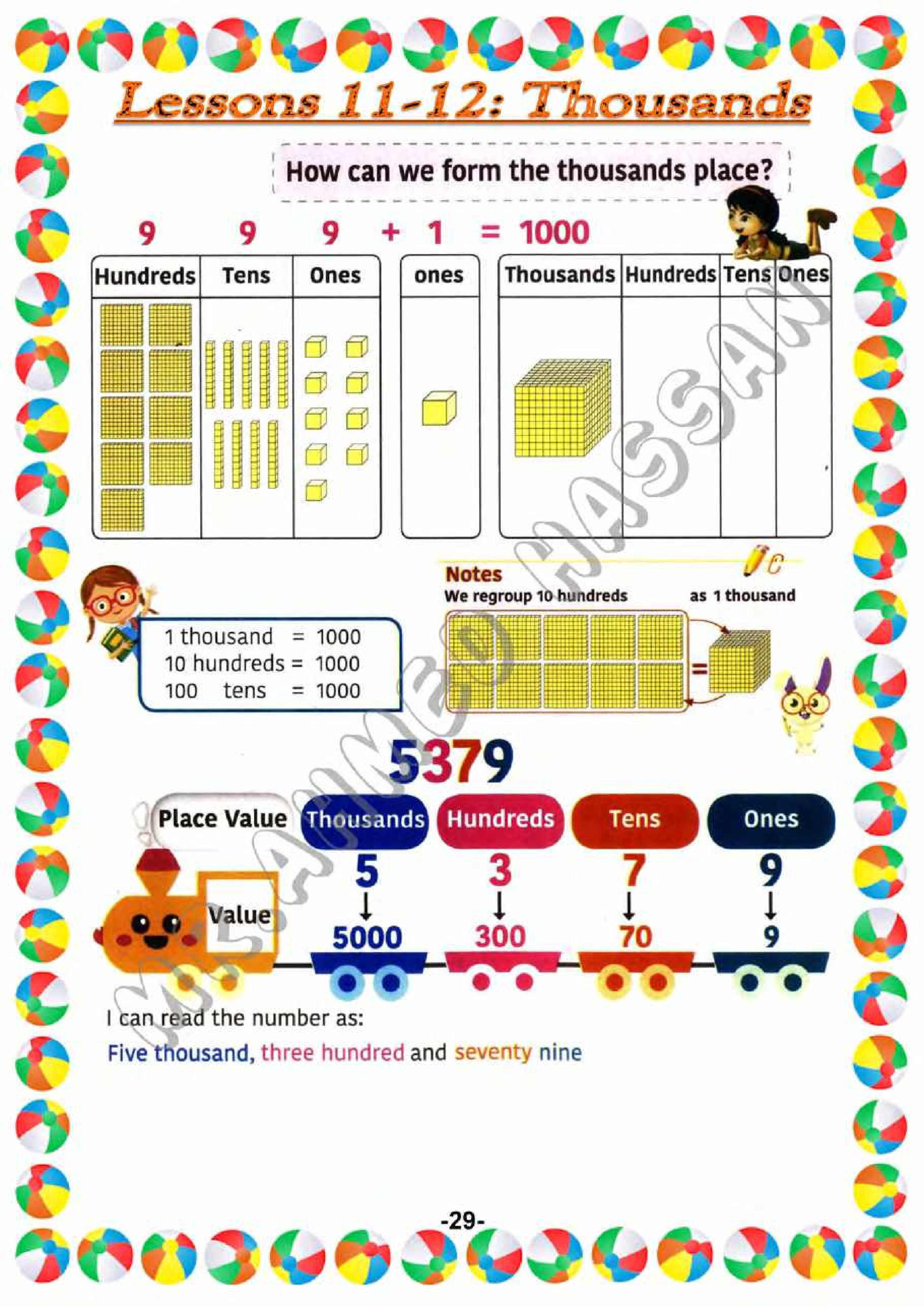
Object	Length
	....
	....
	....
	....
	....
	....

Title: ....

Key ✕ represents the length of object in cm.

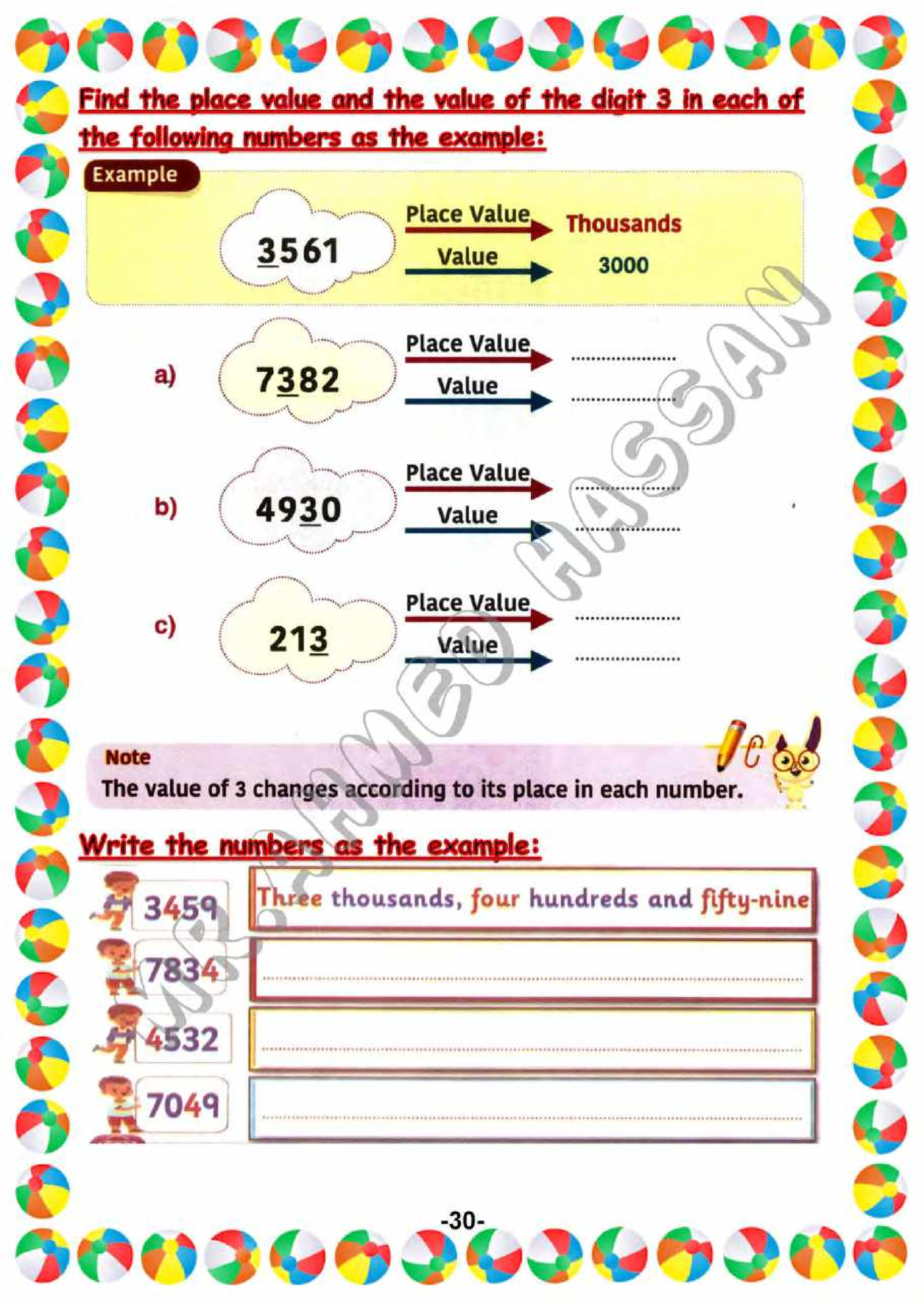
Lessons 11-12: Thousands

How can we form the thousands place?



I can read the number as:

Five thousand, three hundred and seventy nine



Find the place value and the value of the digit 3 in each of the following numbers as the example:

Example

3561 → Place Value → Thousands
→ Value → 3000

a) 7382 → Place Value → ....
→ Value → ....

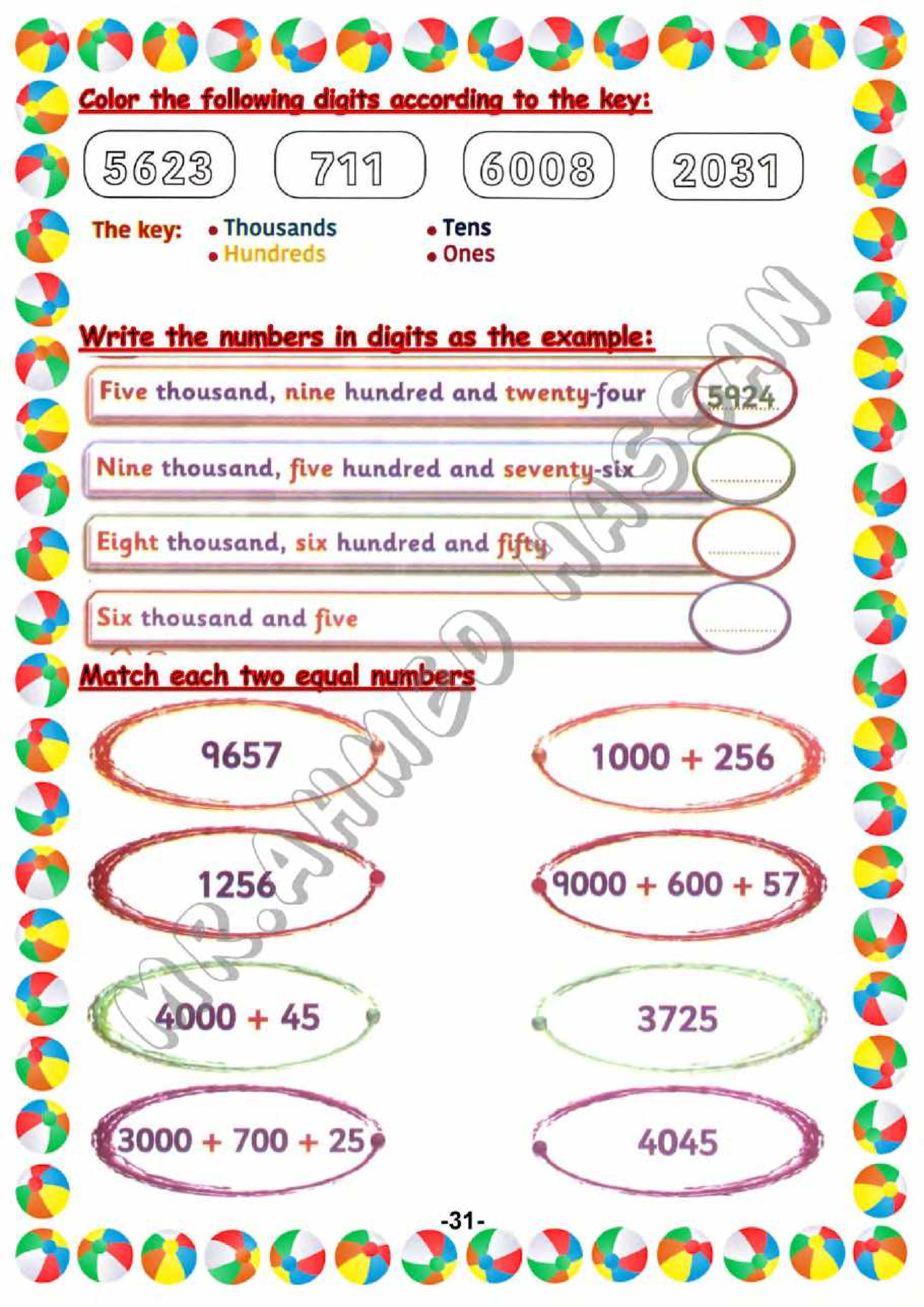
b) 4930 → Place Value → ....
→ Value → ....

c) 213 → Place Value → ....
→ Value → ....

Note
The value of 3 changes according to its place in each number.

Write the numbers as the example:

Number	In words
3459	Three thousands, four hundreds and fifty-nine
7834	....
4532	....
7049	....



Color the following digits according to the key:

5623 711 6008 2031

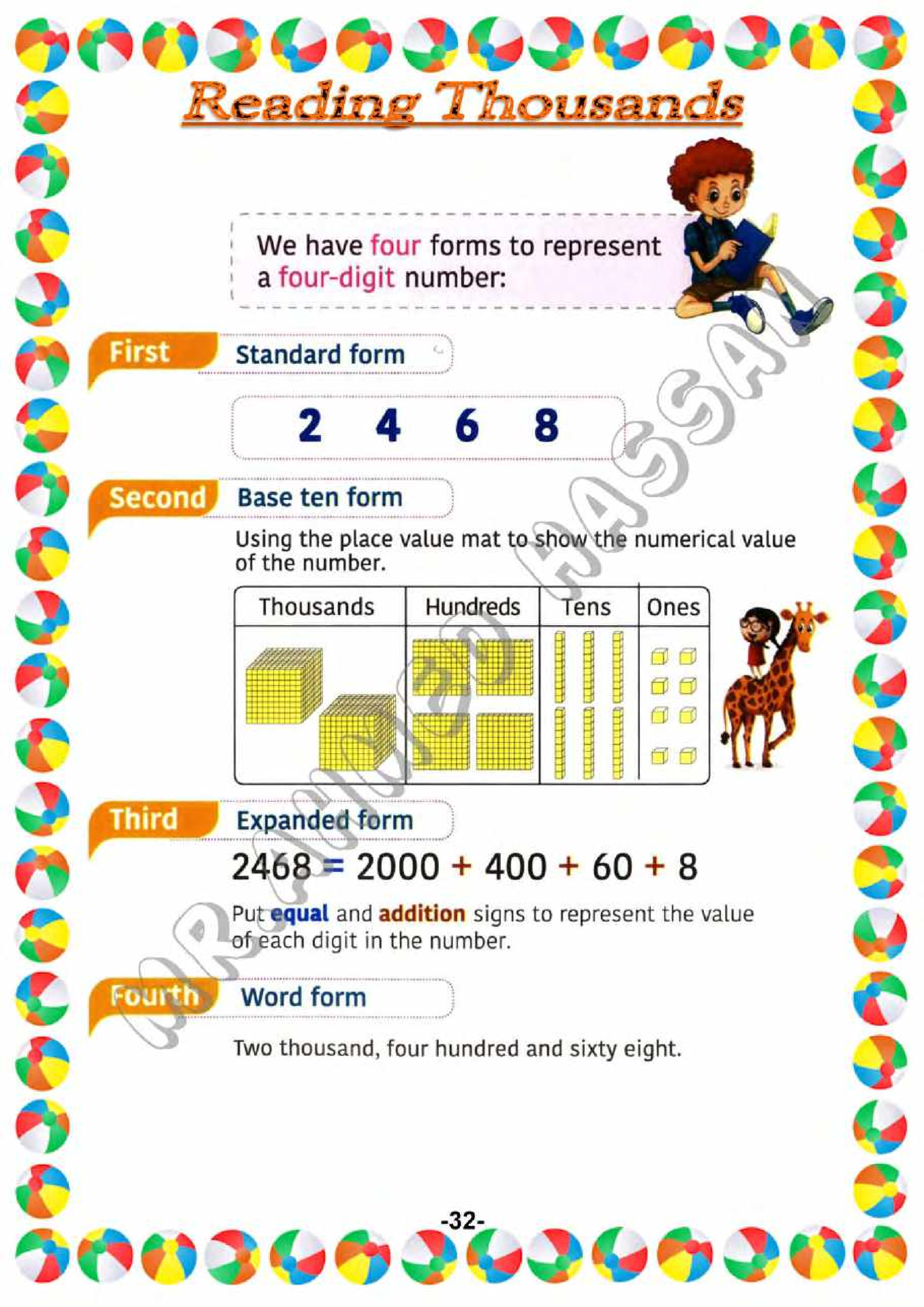
The key:
- Thousands
- Hundreds
- Tens
- Ones

Write the numbers in digits as the example:

Five thousand, nine hundred and twenty-four	5924
Nine thousand, five hundred and seventy-six	....
Eight thousand, six hundred and fifty	....
Six thousand and five	....

Match each two equal numbers

9657	1000 + 256
1256	9000 + 600 + 57
4000 + 45	3725
3000 + 700 + 25	4045



Reading Thousands

We have four forms to represent a four-digit number:

First Standard form

2 4 6 8

Second Base ten form

Using the place value mat to show the numerical value of the number.

Thousands	Hundreds	Tens	Ones

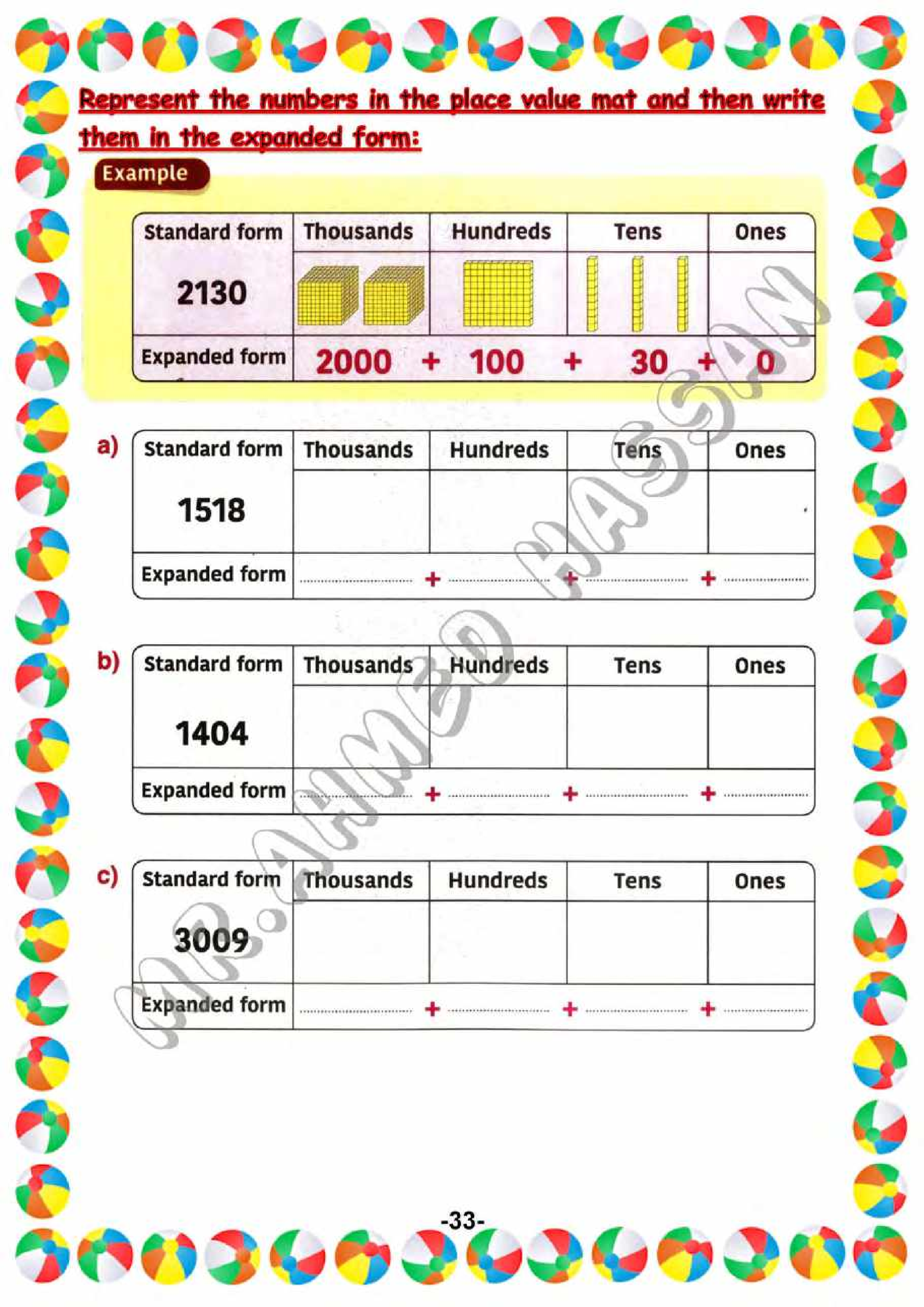
Third Expanded form

2468 = 2000 + 400 + 60 + 8

Put **equal** and **addition** signs to represent the value of each digit in the number.

Fourth Word form

Two thousand, four hundred and sixty eight.



Represent the numbers in the place value mat and then write them in the expanded form:

Example

Standard form	Thousands	Hundreds	Tens	Ones
2130				
Expanded form	2000 +	100 +	30 +	0

a)

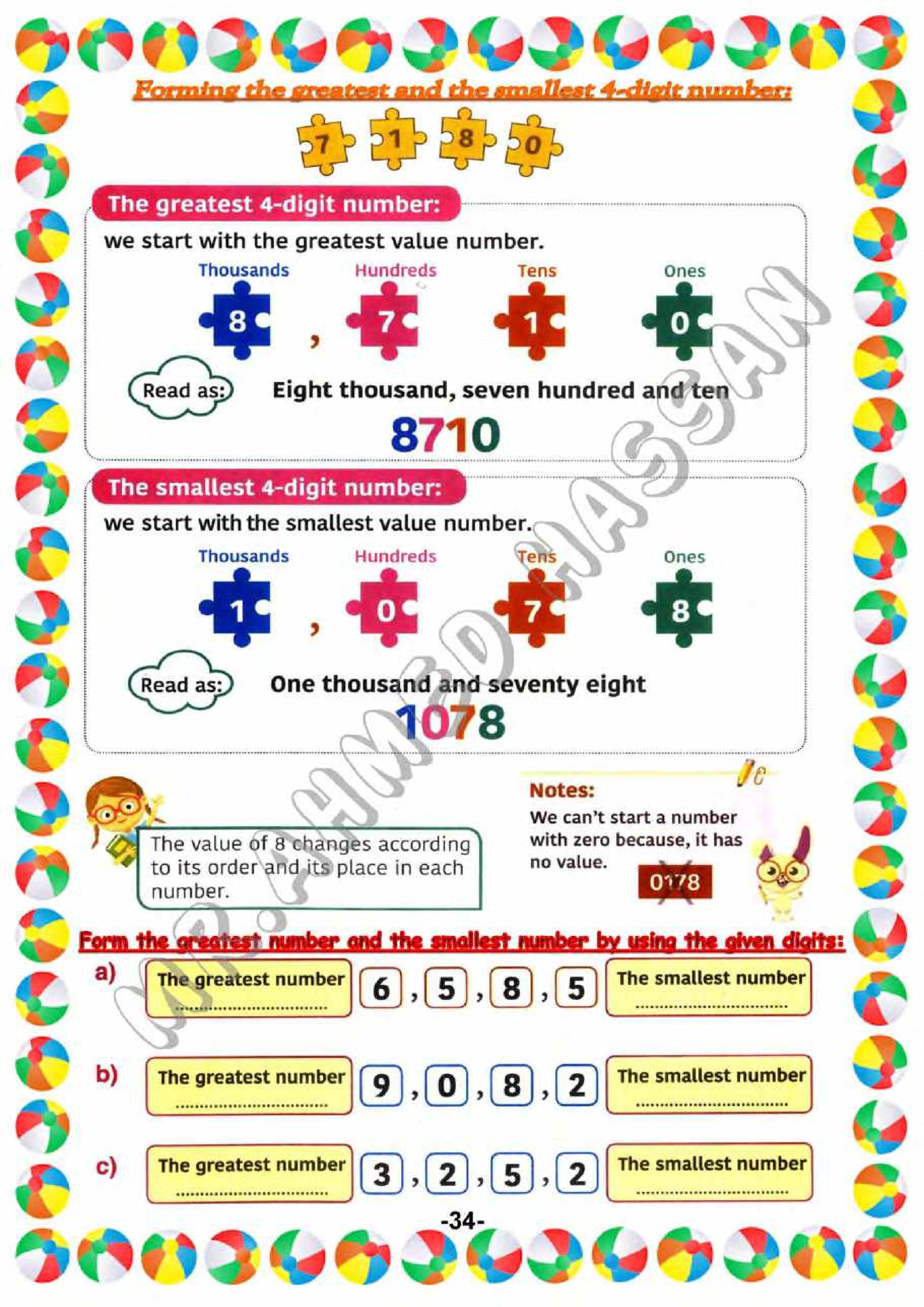
Standard form	Thousands	Hundreds	Tens	Ones
1518				
Expanded form	.... +	.... +	.... +	....

b)

Standard form	Thousands	Hundreds	Tens	Ones
1404				
Expanded form	.... +	.... +	.... +	....

c)

Standard form	Thousands	Hundreds	Tens	Ones
3009				
Expanded form	.... +	.... +	.... +	....



Forming the greatest and the smallest 4-digit number:

7 1 8 0

The greatest 4-digit number:

we start with the greatest value number.

Thousands	Hundreds	Tens	Ones
8	, 7	1	0

Read as: **Eight thousand, seven hundred and ten**

8710

The smallest 4-digit number:

we start with the smallest value number.

Thousands	Hundreds	Tens	Ones
1	, 0	7	8

Read as: **One thousand and seventy eight**

1078

The value of 8 changes according to its order and its place in each number.

Notes:

We can't start a number with zero because, it has no value.

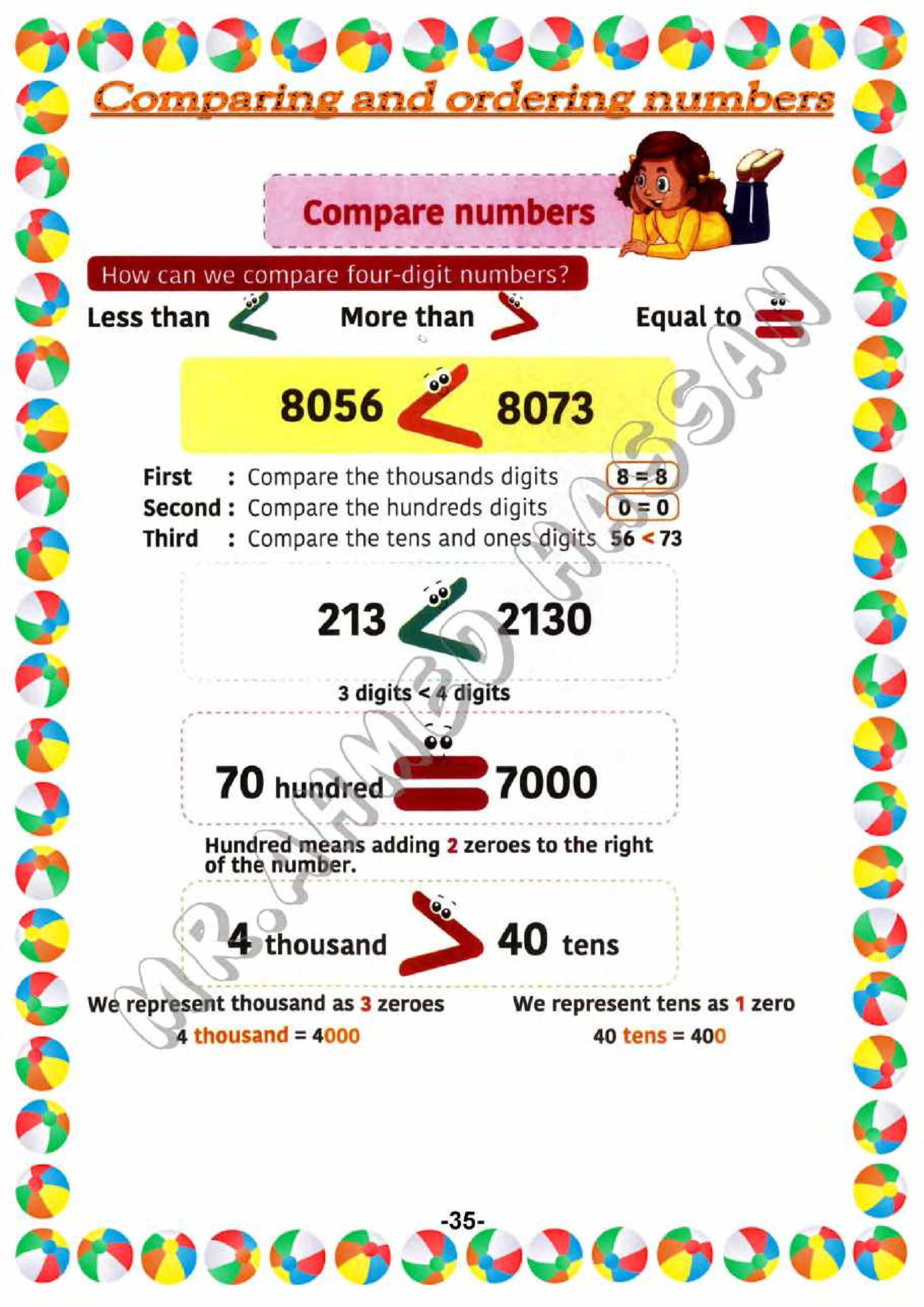
0178

Form the greatest number and the smallest number by using the given digits:

a) The greatest number .... 6 , 5 , 8 , 5 The smallest number ....

b) The greatest number .... 9 , 0 , 8 , 2 The smallest number ....

c) The greatest number .... 3 , 2 , 5 , 2 The smallest number ....



Comparing and ordering numbers

Compare numbers

How can we compare four-digit numbers?

Less than < **More than** > **Equal to** =

8056 < 8073

First : Compare the thousands digits **8 = 8**
Second : Compare the hundreds digits **0 = 0**
Third : Compare the tens and ones digits **56 < 73**

213 < 2130

3 digits < 4 digits

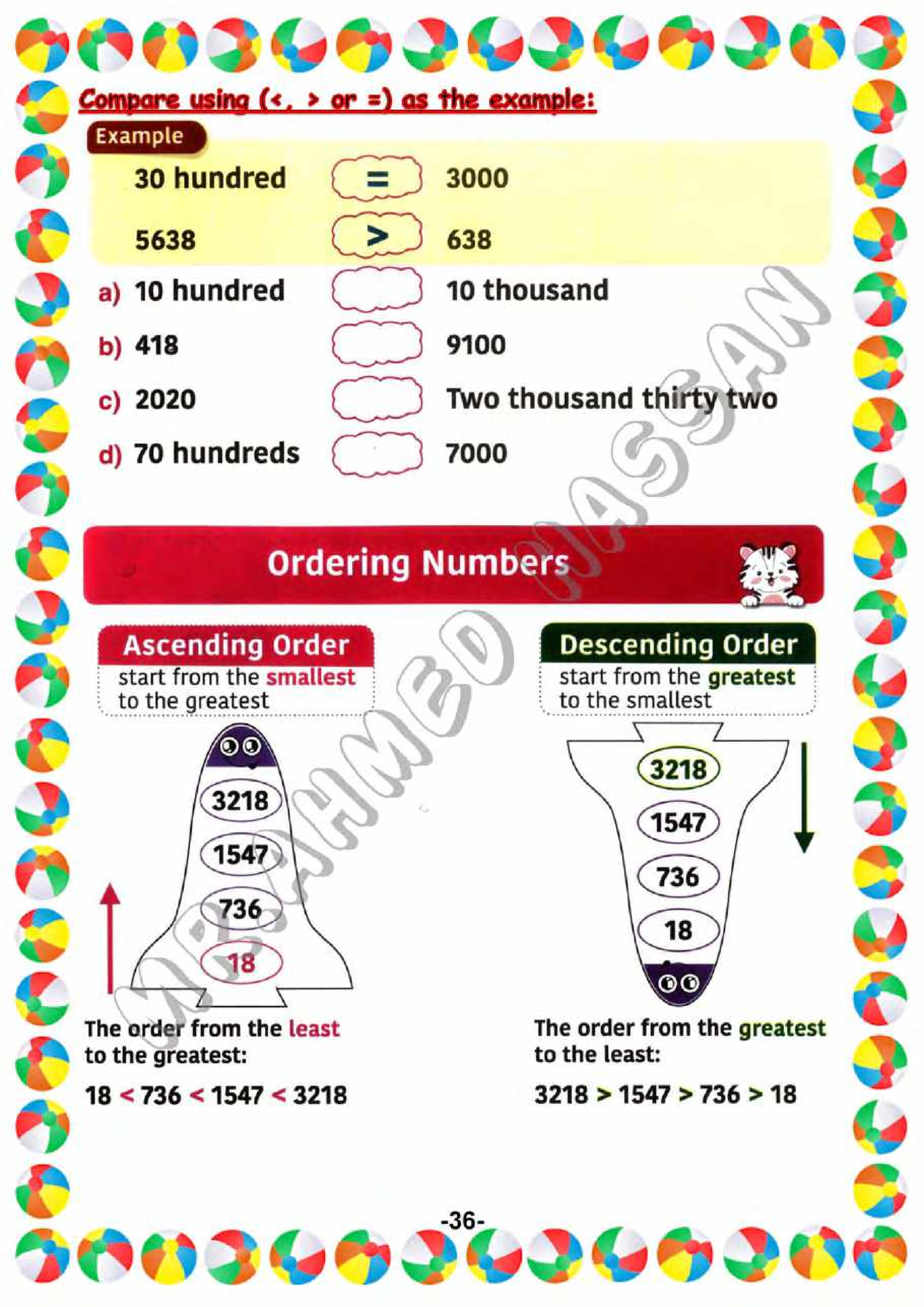
70 hundred = 7000

Hundred means adding 2 zeroes to the right of the number.

4 thousand > 40 tens

We represent thousand as 3 zeroes
4 thousand = 4000

We represent tens as 1 zero
40 tens = 400



Compare using (<, > or =) as the example:

Example

30 hundred	=	3000
5638	>	638

a) 10 hundred ( ) 10 thousand

b) 418 ( ) 9100

c) 2020 ( ) Two thousand thirty two

d) 70 hundreds ( ) 7000

Ordering Numbers

Ascending Order

start from the **smallest** to the greatest

The order from the least to the greatest:

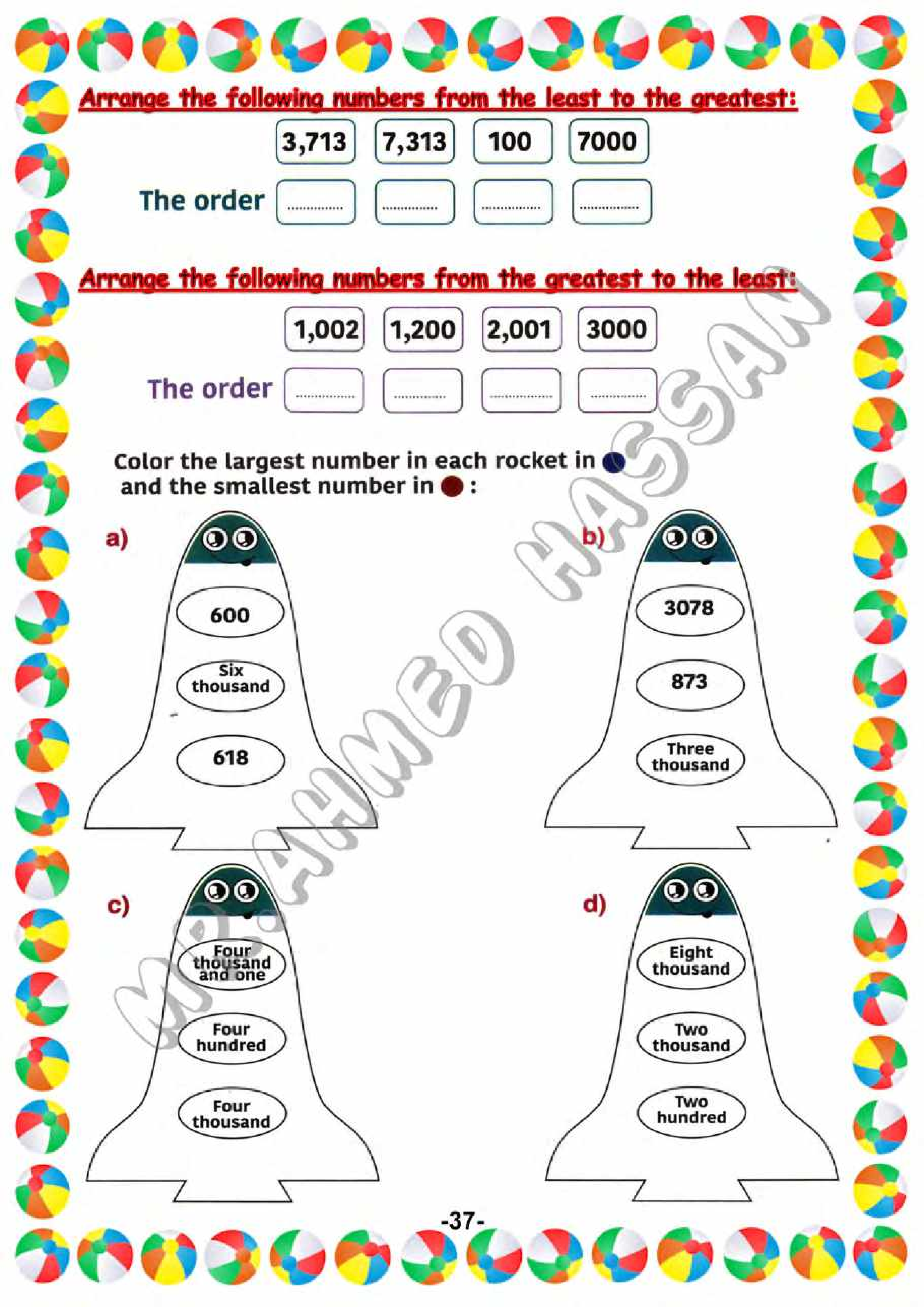
18 < 736 < 1547 < 3218

Descending Order

start from the **greatest** to the smallest

The order from the greatest to the least:

3218 > 1547 > 736 > 18



Arrange the following numbers from the least to the greatest:

3,713	7,313	100	7000

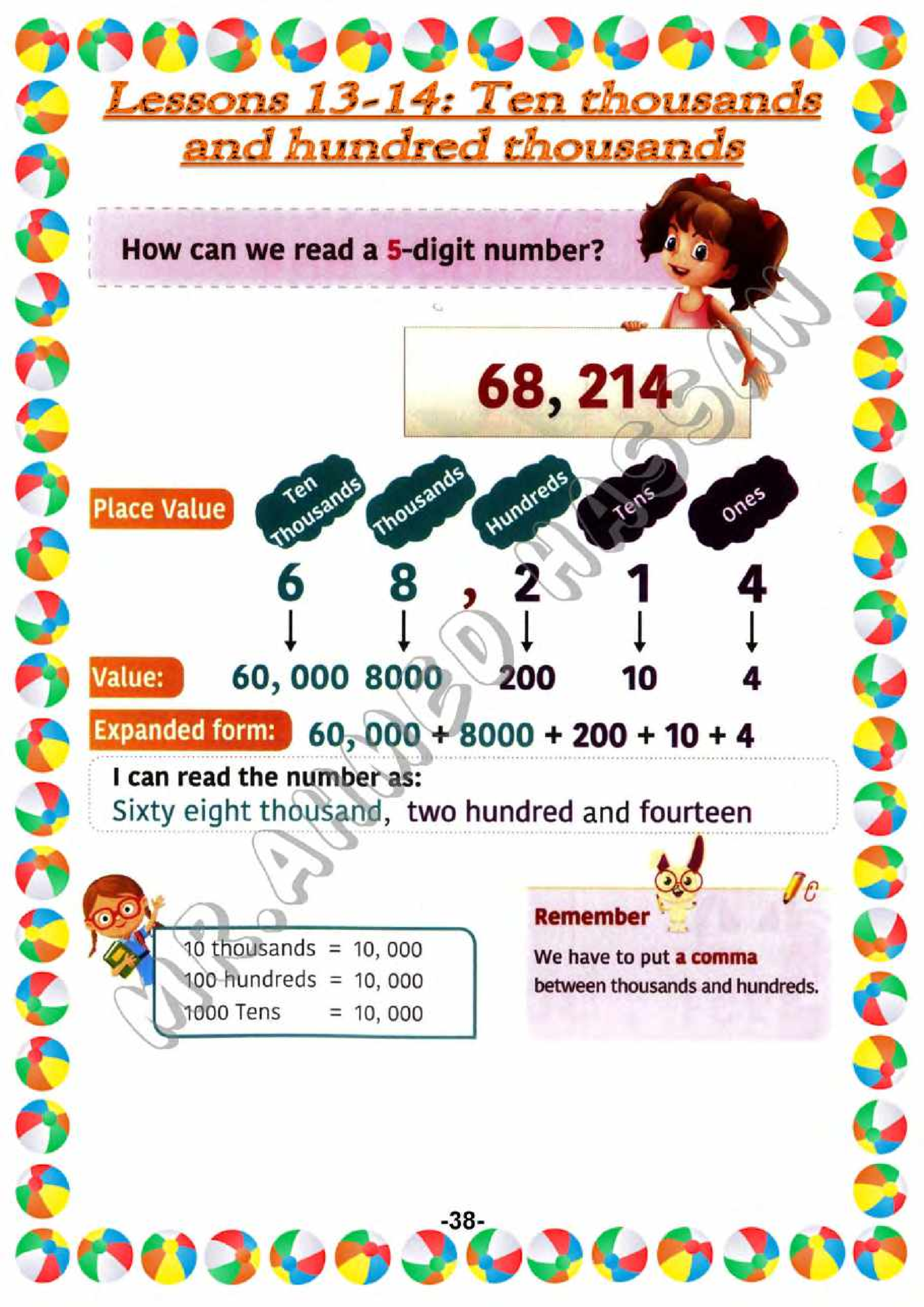
The order	....	....	....	....

Arrange the following numbers from the greatest to the least:

1,002	1,200	2,001	3000

The order	....	....	....	....

Color the largest number in each rocket in ● and the smallest number in ● :



Lessons 13-14: Ten thousands and hundred thousands

How can we read a 5-digit number?

68, 214

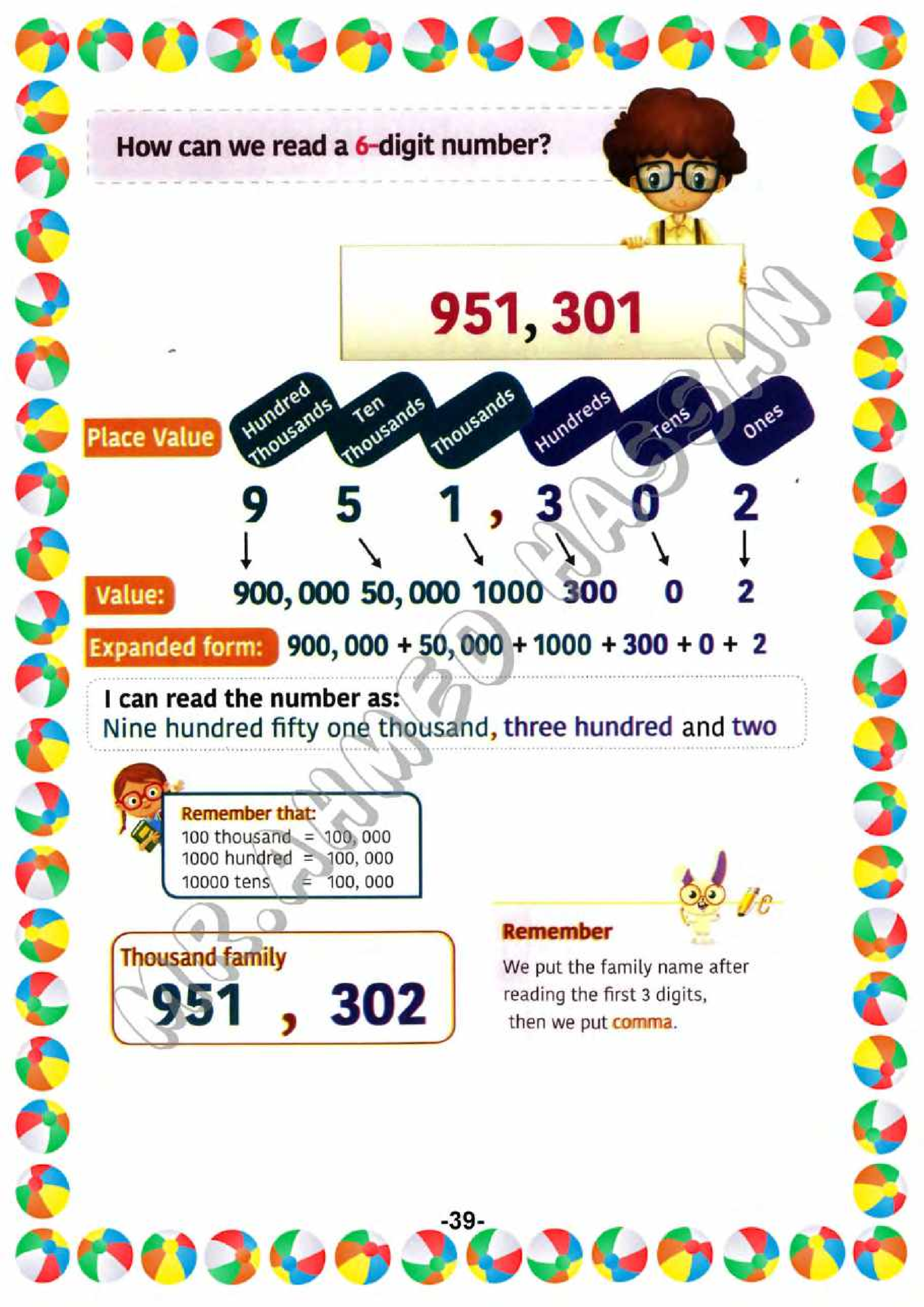
Place Value	Ten Thousands	Thousands	,	Hundreds	Tens	Ones
	6	8	,	2	1	4
Value:	60, 000	8000		200	10	4

Expanded form: 60, 000 + 8000 + 200 + 10 + 4

I can read the number as:
Sixty eight thousand, two hundred and fourteen

10 thousands = 10, 000
100 hundreds = 10, 000
1000 Tens = 10, 000

Remember
We have to put **a comma** between thousands and hundreds.



How can we read a 6-digit number?

951, 301

Place Value	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
	9	5	1 ,	3	0	2
Value:	900, 000	50, 000	1000	300	0	2

Expanded form: 900, 000 + 50, 000 + 1000 + 300 + 0 + 2

I can read the number as:
Nine hundred fifty one thousand, three hundred and two

Remember that:
100 thousand = 100, 000
1000 hundred = 100, 000
10000 tens = 100, 000

Thousand family
951 , 302

Remember
We put the family name after reading the first 3 digits, then we put comma.

Find the place value and the value of the colored digit in each number:

a) 354,691

Place value: ....

Value: ....

b) 206,143

Place value: ....

Value: ....

c) 318,064

Place value: ....

Value: ....

d) 181,900

Place value: ....

Value: ....

Complete the table:

	Number	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
	Example 36, 219	-	3	6	2	1	9
a)	504, 622						
b)	18, 943						
c)	3, 412						
d)	129, 684						



Complete as the example:

Example

10, 368 | 10, 000 + 0 + 300 + 60 + 8

a) 215, 784 | .... + ... + ... + ... + ... + ...

b) 518, 367 | .... + ... + ... + ... + ... + ...

Form the smallest and the greatest number using the given digits:

a) 1 , 3 , 9 , 8 , 1 , 8

The smallest number ....

The greatest number ....

b) 8 , 7 , 2 , 9 , 9 , 0

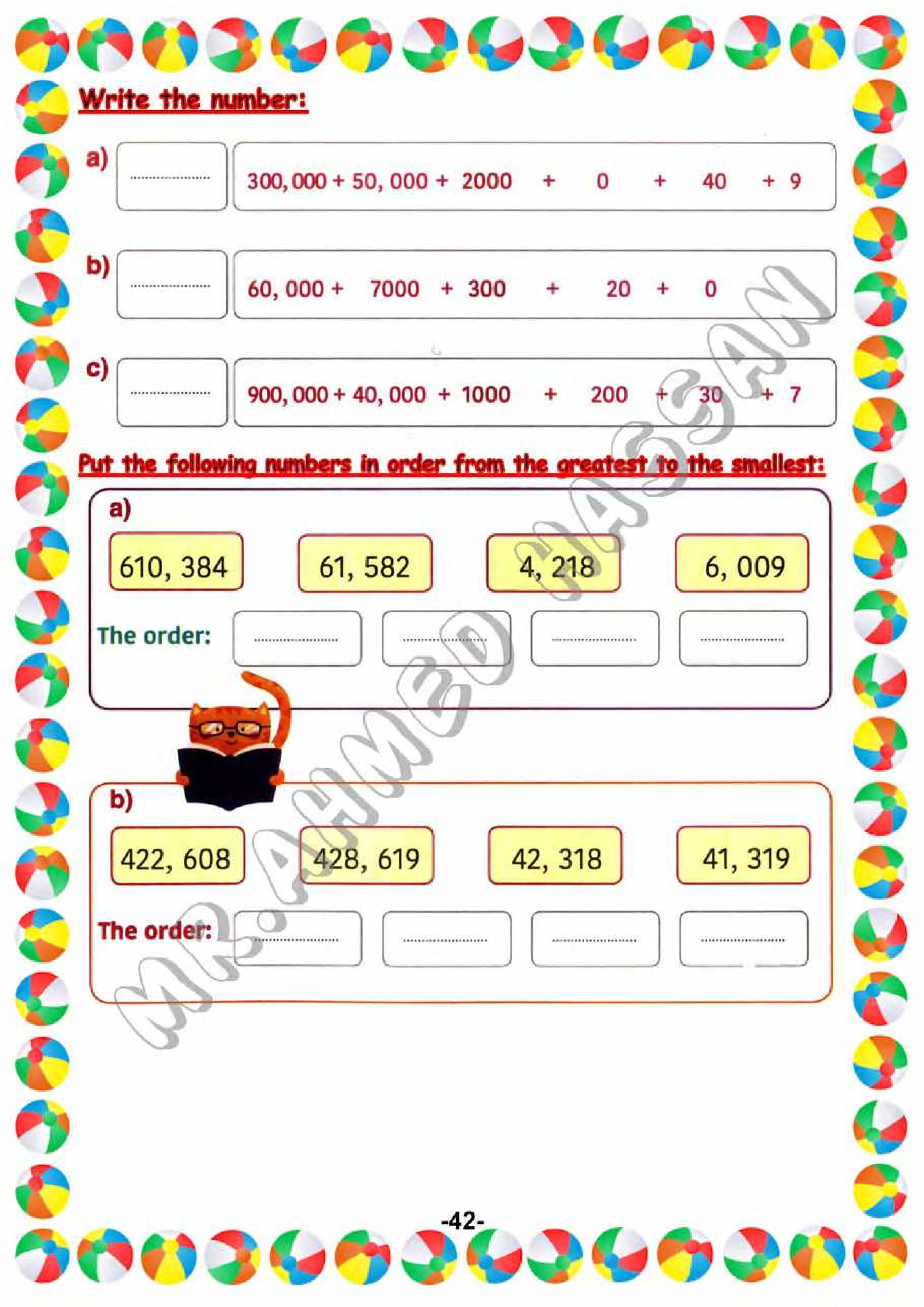
The smallest number ....

The greatest number ....

c) 3 , 6 , 1 , 0 , 7 , 0

The smallest number ....

The greatest number ....



Write the number:

a) .... | 300,000 + 50,000 + 2000 + 0 + 40 + 9

b) .... | 60,000 + 7000 + 300 + 20 + 0

c) .... | 900,000 + 40,000 + 1000 + 200 + 30 + 7

Put the following numbers in order from the greatest to the smallest:

a)

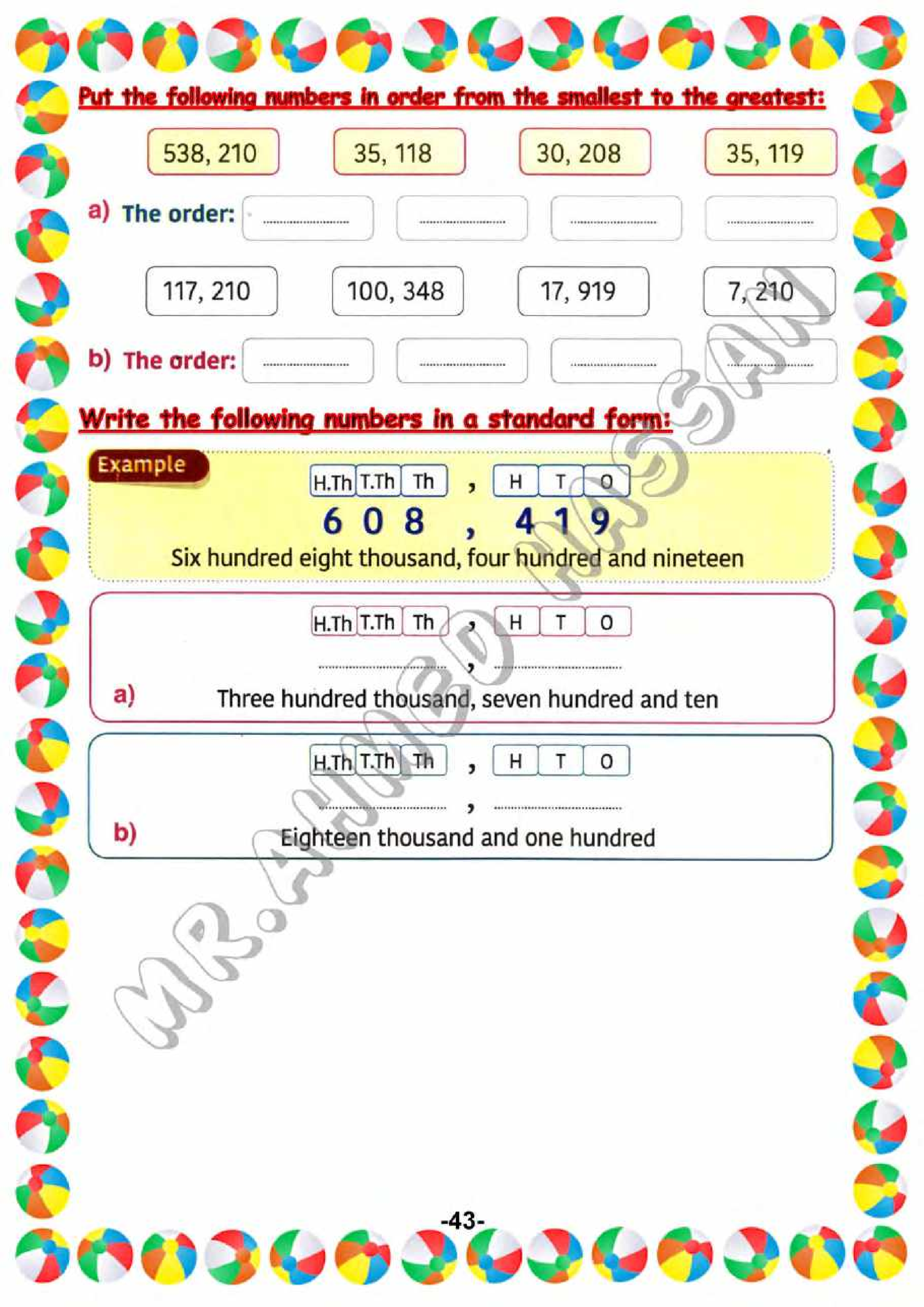
610, 384   61, 582   4, 218   6, 009

The order: ....

b)

422, 608   428, 619   42, 318   41, 319

The order: ....



Put the following numbers in order from the smallest to the greatest:

538, 210 | 35, 118 | 30, 208 | 35, 119

a) The order: ....

117, 210 | 100, 348 | 17, 919 | 7, 210

b) The order: ....

Write the following numbers in a standard form:

Example

H.Th	T.Th	Th	,	H	T	O
6	0	8	,	4	1	9

Six hundred eight thousand, four hundred and nineteen

a)

H.Th	T.Th	Th	,	H	T	O

.... , ...

Three hundred thousand, seven hundred and ten

b)

H.Th	T.Th	Th	,	H	T	O

.... , ...

Eighteen thousand and one hundred

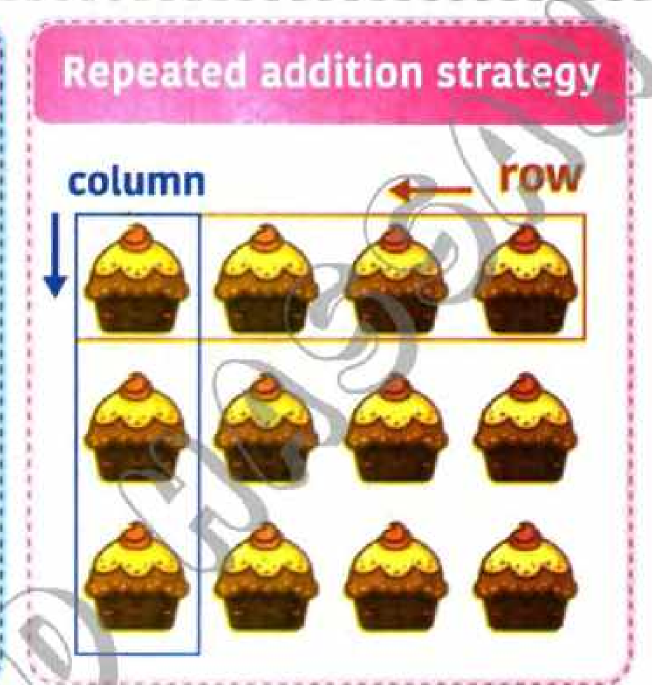
Lessons 15-18: Arrays& multiplication

To count the total number of cupcakes, we can use 2 efficient strategies:

Skip counting strategy

column ↓ ← row

- To get the rows, skip counting by 3
  3 , 6 , 9 , 12
  3 rows of 4.
- To get the columns, skip counting by 4
  4 , 8 , 12
  4 columns of 3.

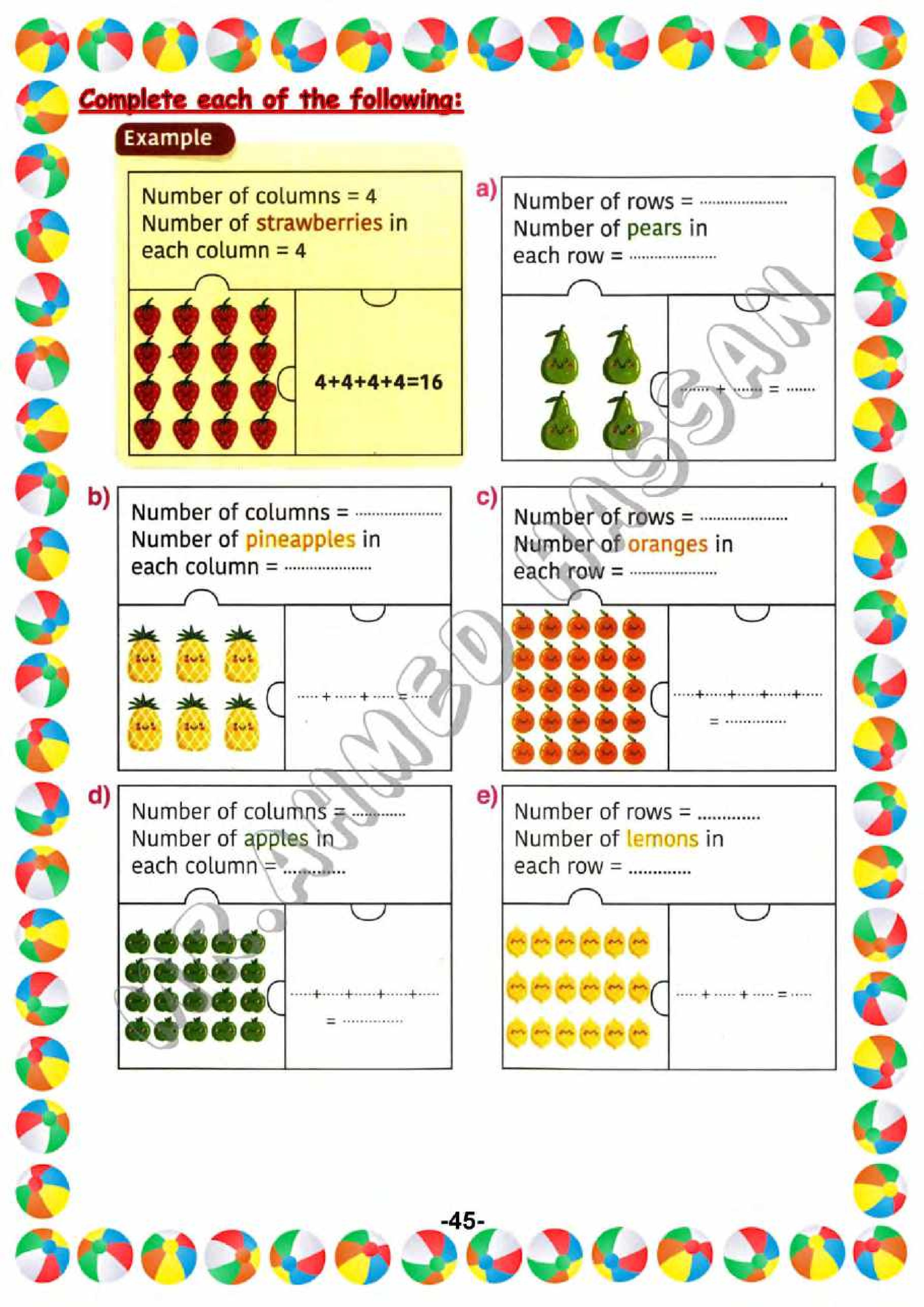


- To get the total
  rows = 4 + 4 + 4 = 12
  3 rows of 4.
- To get the total
  columns = 3 + 3 + 3 + 3 = 12
  4 columns of 3.

Counting one by one strategy:

We can use counting one by one strategy but it is not an efficient strategy.





Complete each of the following:

Example

Number of columns = 4
Number of strawberries in each column = 4

4+4+4+4=16

a) Number of rows = ...
Number of pears in each row = ...

...... + ... = ...

b) Number of columns = ...
Number of pineapples in each column = ...

...... + ... + ... = ...

c) Number of rows = ...
Number of oranges in each row = ...

......+......+......+......+......
= ....

d) Number of columns = ...
Number of apples in each column = ...

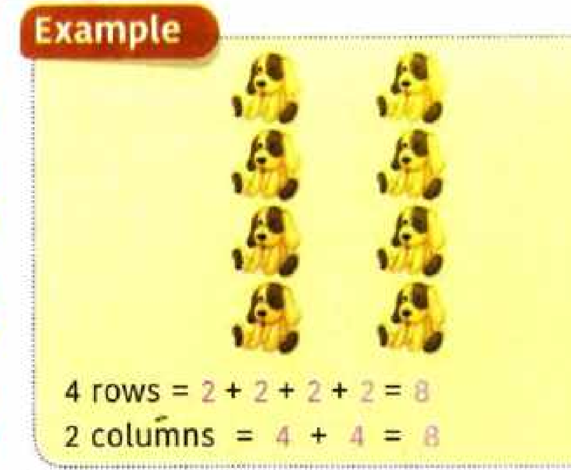
......+......+......+......+......
= ....

e) Number of rows = ...
Number of lemons in each row = ...

...... + ... + ... = ...

Complete:

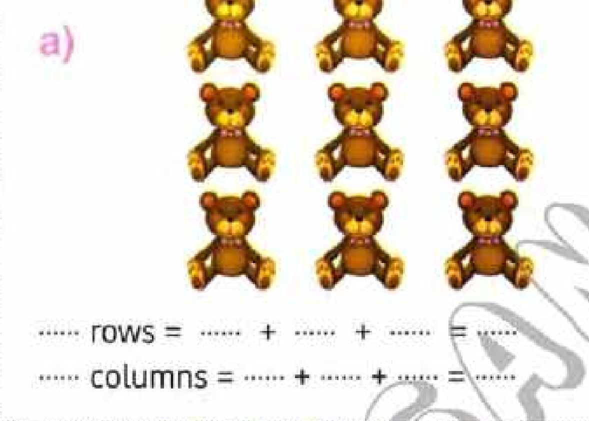
Example



4 rows = 2 + 2 + 2 + 2 = 8

2 columns = 4 + 4 = 8

a)



...... rows = ... + ... + ... = ...

...... columns = ... + ... + ... = ...

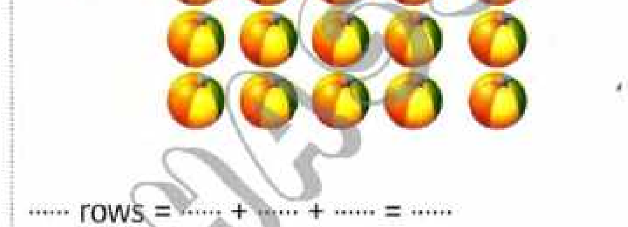
b)



...... rows = ... + ... = ...

...... columns = ... + ... + ... + ... + ... = ...

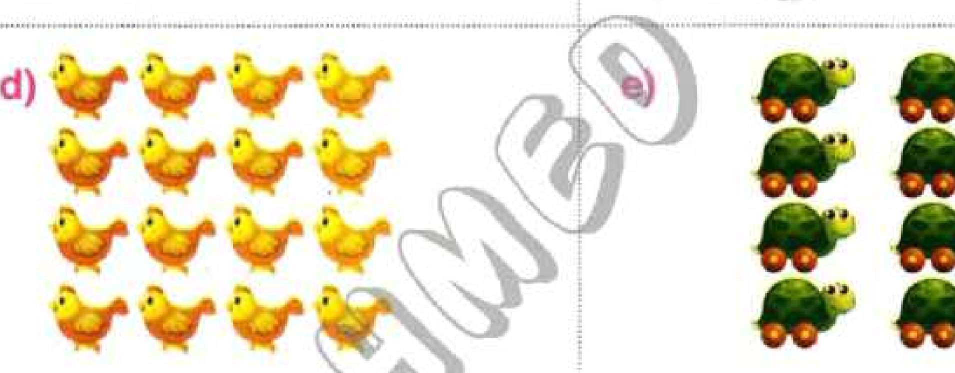
c)



...... rows = ... + ... + ... = ...

...... columns = ... + ... + ... + ... + ... = ...

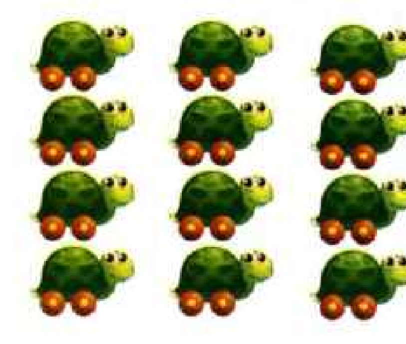
d)



...... rows = ... + ... + ... + ... = ...

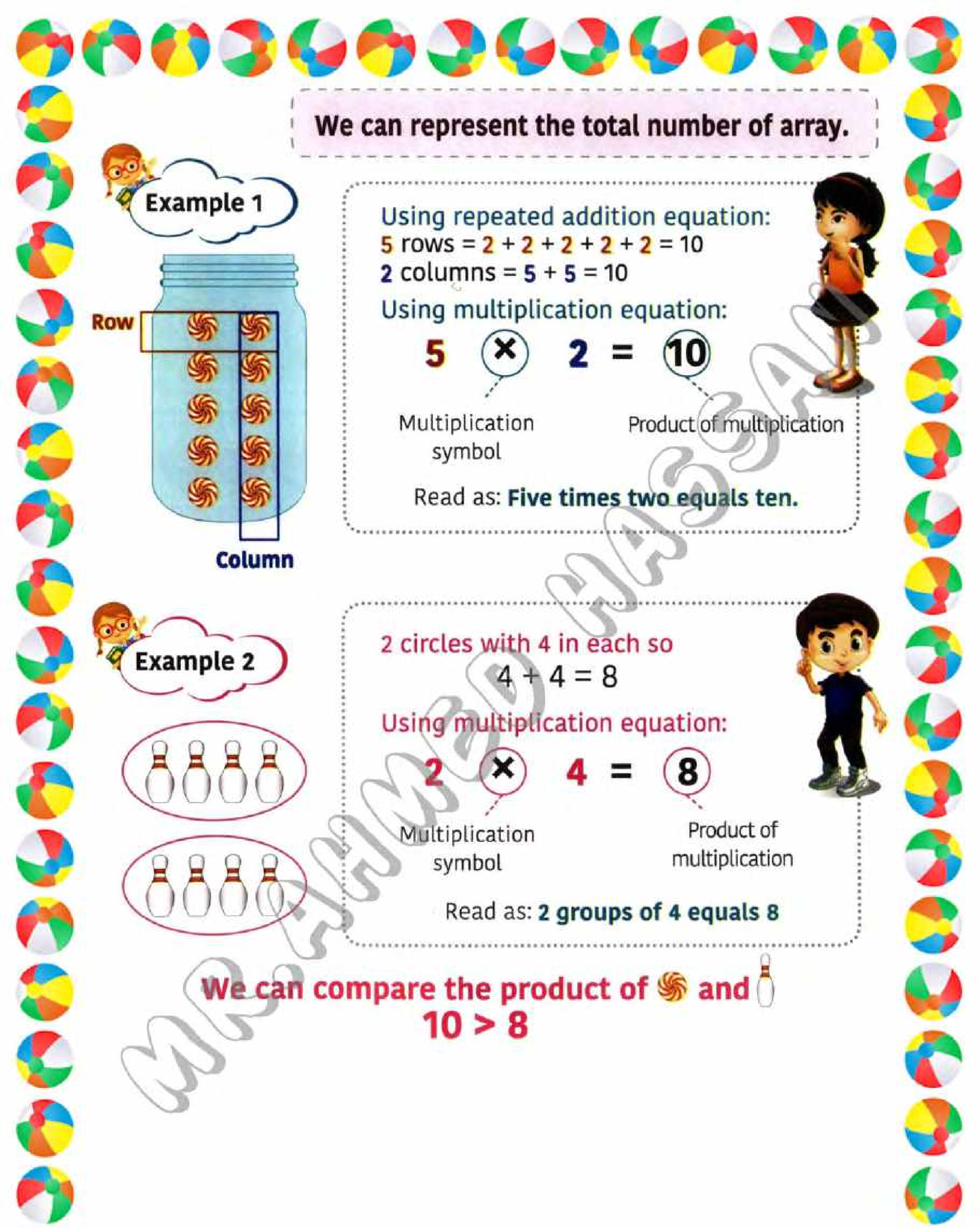
...... columns = ... + ... + ... + ... = ...

e)



...... rows = ... + ... + ... + ... = ...

...... columns = ... + ... + ... = ...



We can represent the total number of array.

Example 1

Row

Column

Using repeated addition equation:

5 rows = 2 + 2 + 2 + 2 + 2 = 10

2 columns = 5 + 5 = 10

Using multiplication equation:

$$5 \times 2 = 10$$

Multiplication symbol

Product of multiplication

Read as: **Five times two equals ten.**

Example 2

2 circles with 4 in each so

$$4 + 4 = 8$$

Using multiplication equation:

$$2 \times 4 = 8$$

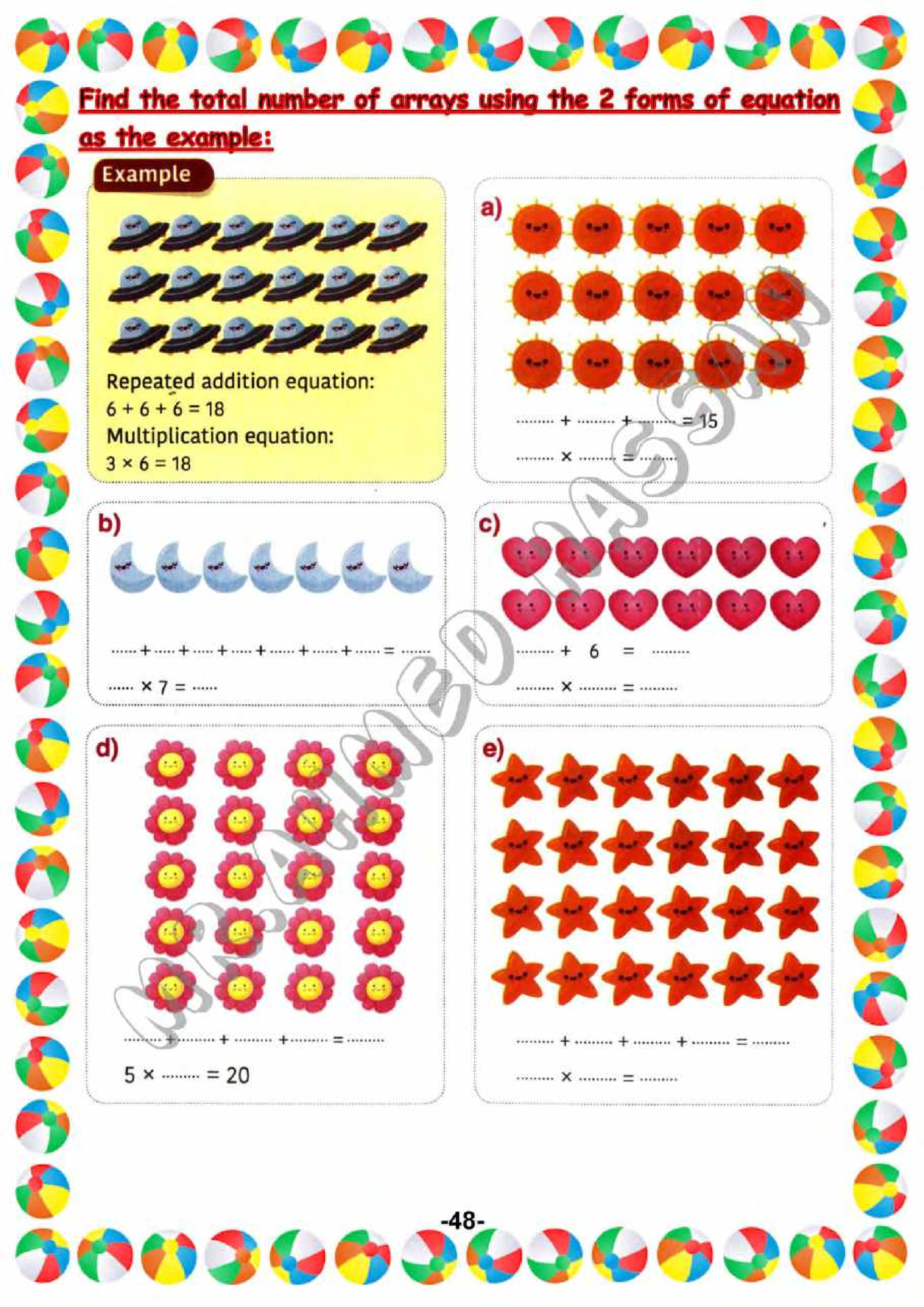
Multiplication symbol

Product of multiplication

Read as: **2 groups of 4 equals 8**

We can compare the product of 🍬 and 🎳

10 > 8



Find the total number of arrays using the 2 forms of equation as the example:

Example

Repeated addition equation:
6 + 6 + 6 = 18
Multiplication equation:
3 × 6 = 18

a)
……… + ……… + ……… = 15
……… × ……… = ………

b)
…… + …… + …… + …… + …… + …… + …… = ……
…… × 7 = ……

c)
……… + 6 = ………
……… × ……… = ………

d)
……… + ……… + ……… + ……… = ………
5 × ……… = 20

e)
……… + ……… + ……… + ……… = ………
……… × ……… = ………



Draw arrays to represent the following equations using □ , ○ , ☆ or ☺ :

Example

3 + 3 + 3 + 3 = 12

☆ ☆ ☆ ☆

☆ ☆ ☆ ☆

☆ ☆ ☆ ☆

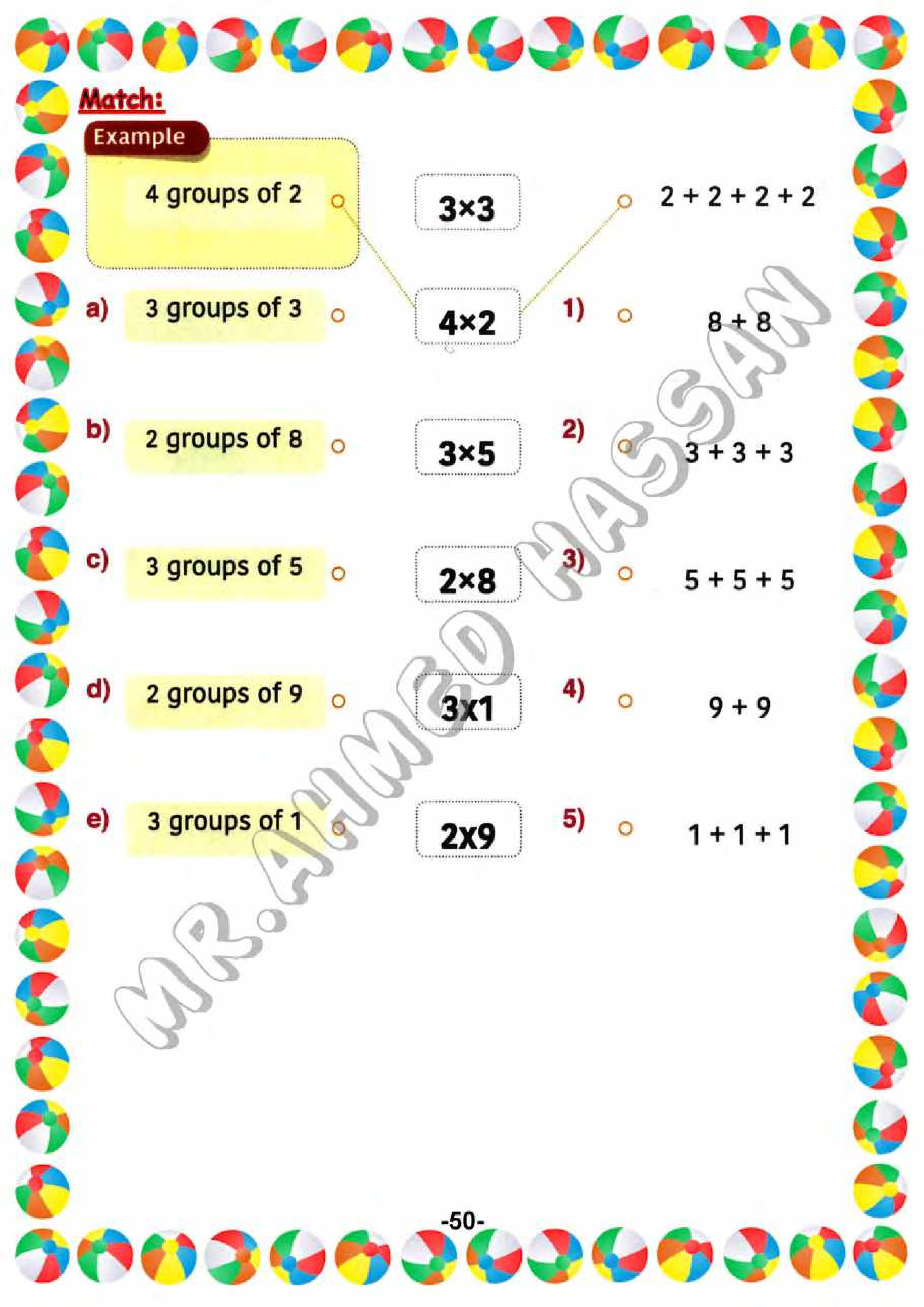
a) 5 × 3 = ...

b) 4 × 4 = ...

c) 2 + 2 + 2 = ...

d) 1 + 1 + 1 + 1 + 1 = ...

e) 2 × 6 = ...



Match:

Example

	4 groups of 2	3×3		2 + 2 + 2 + 2
a)	3 groups of 3	4×2	1)	8 + 8
b)	2 groups of 8	3×5	2)	3 + 3 + 3
c)	3 groups of 5	2×8	3)	5 + 5 + 5
d)	2 groups of 9	3x1	4)	9 + 9
e)	3 groups of 1	2x9	5)	1 + 1 + 1



Lessons 19-20: Commutative property

Commutative property in addition:

$5 + 4 = 4 + 5$

9 9

Adding numbers in different order gives the same sum.

Commutative property in multiplication:

column

row

Multiplying numbers in any order gives the same product.

$3 \times 2 = 6$

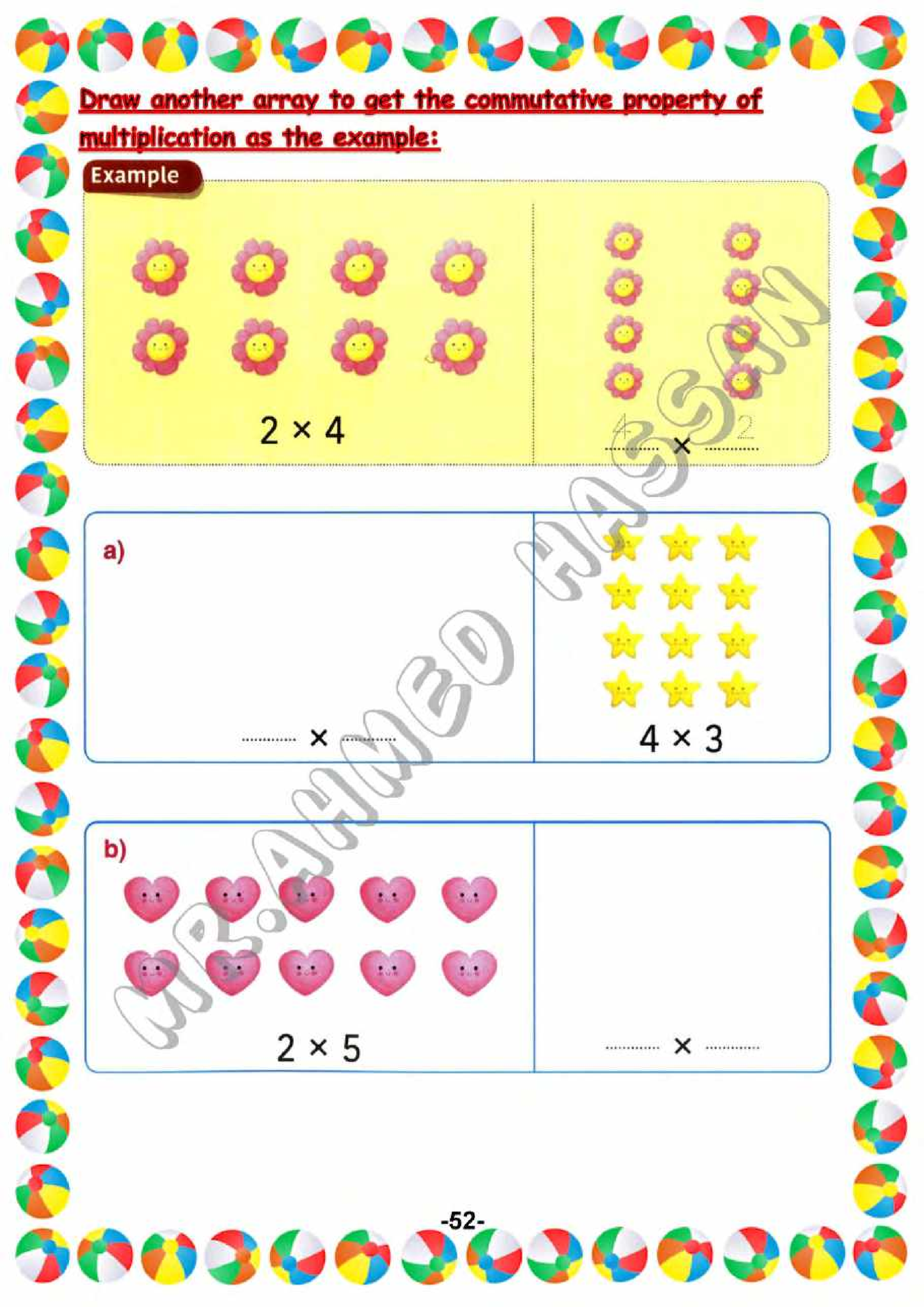
rows columns

Total number is **6**

$2 \times 3 = 6$

rows columns

Total number is **6**



Draw another array to get the commutative property of multiplication as the example:

Example

2 × 4

4 × 2

a)

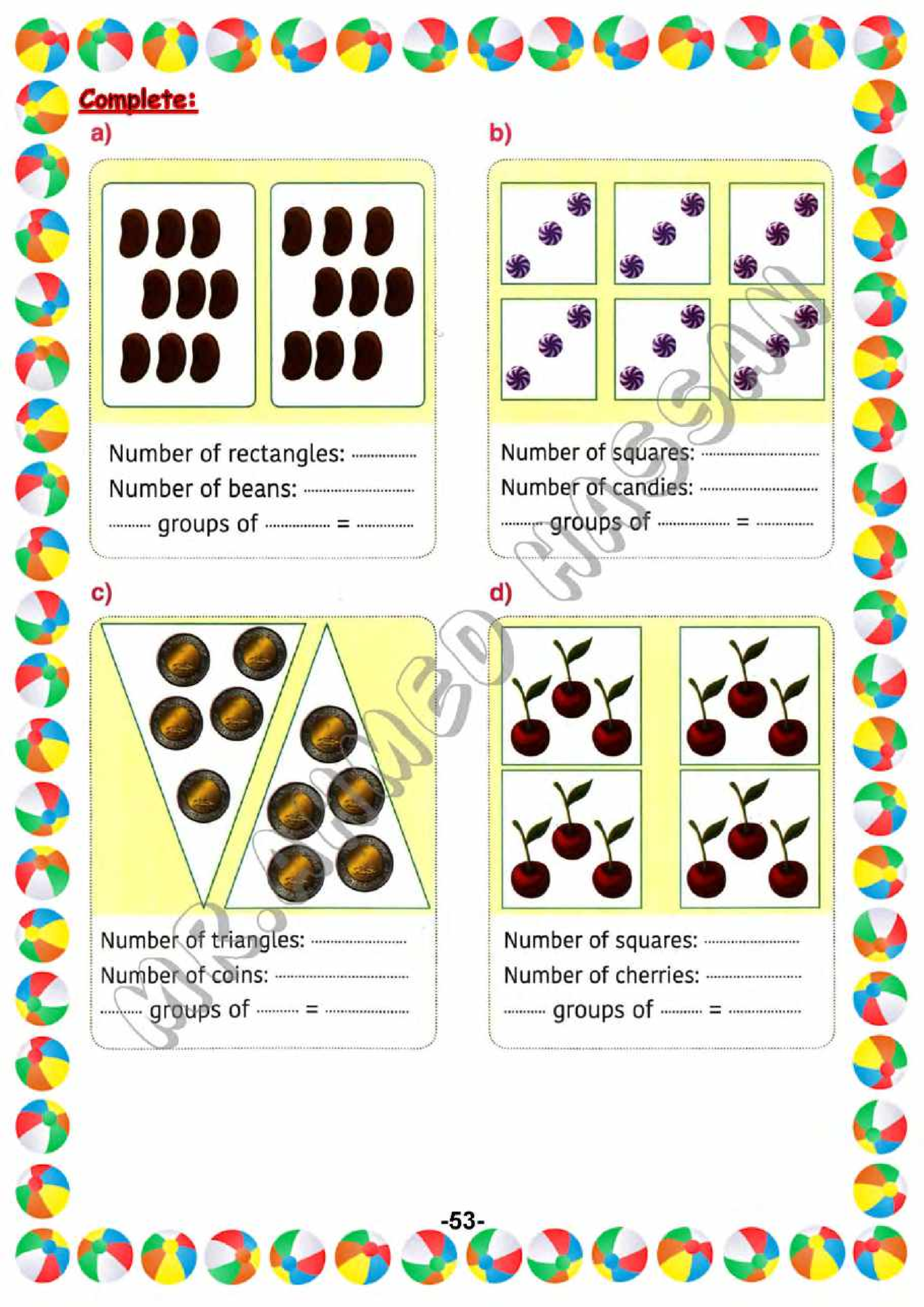
.... × ....

4 × 3

b)

2 × 5

.... × ....



Complete:

a)

Number of rectangles: ....

Number of beans: ....

.... groups of .... = ...

b)

Number of squares: ....

Number of candies: ....

.... groups of .... = ...

c)

Number of triangles: ....

Number of coins: ....

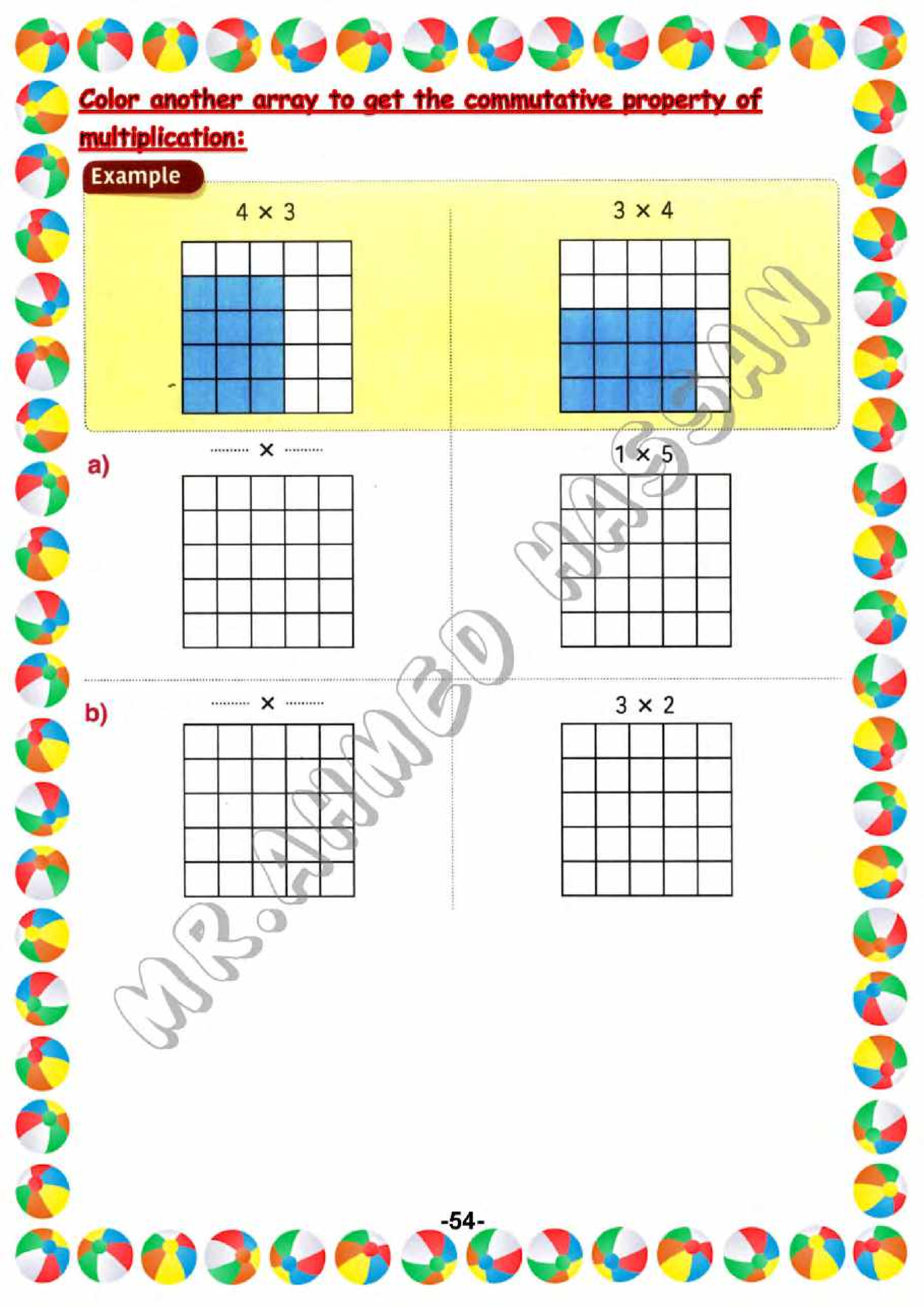
.... groups of .... = ...

d)

Number of squares: ....

Number of cherries: ....

.... groups of .... = ...



Color another array to get the commutative property of multiplication:

Example

4 × 3	3 × 4

a) .... × .... 1 × 5

b) .... × .... 3 × 2

Lessons 21-22: Multiplication story problems

How can we solve multiplication story problems?

May collects 5 kilograms of strawberries every day, how many kg of strawberries did she collect per one week?

Repeated addition strategy:

5 + 5 + 5 + 5 + 5 + 5 + 5 = 35

7 groups of **5**



Multiplication strategy:

7 x 5 = 35

Seven times five equals thirty five.

Ahmed went to a store, he saw three teddy bears on the shelf with 4 red buttons in each.

How many buttons are there in all the teddy bears?

3 groups of **4**

Multiplication strategy:

3 x 4 = 12

Three times four equals twelve.





Remember

- The result of multiplication is called product 2 × 3 = 6

How to write the story problem of a multiplication equation:











There are 4 groups of dogs, each one has 3 dogs

Then the total number of dogs equals 12 dogs.



Read and solve:

At school the students were standing in two rows each row has 5 students, how many students are there?

The total number of students

= ..5... + ..5... = ..10.. students

= ..2... × ..5... = ..10.. students



Read and solve:

Mazen runs 2 miles each day. How many miles does he run in a week?

the total number of miles

in a week = ... + ... + ... + ... + ... + ... + ... =

.... x .... = ... miles

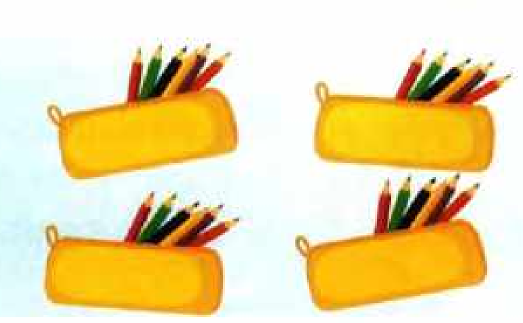


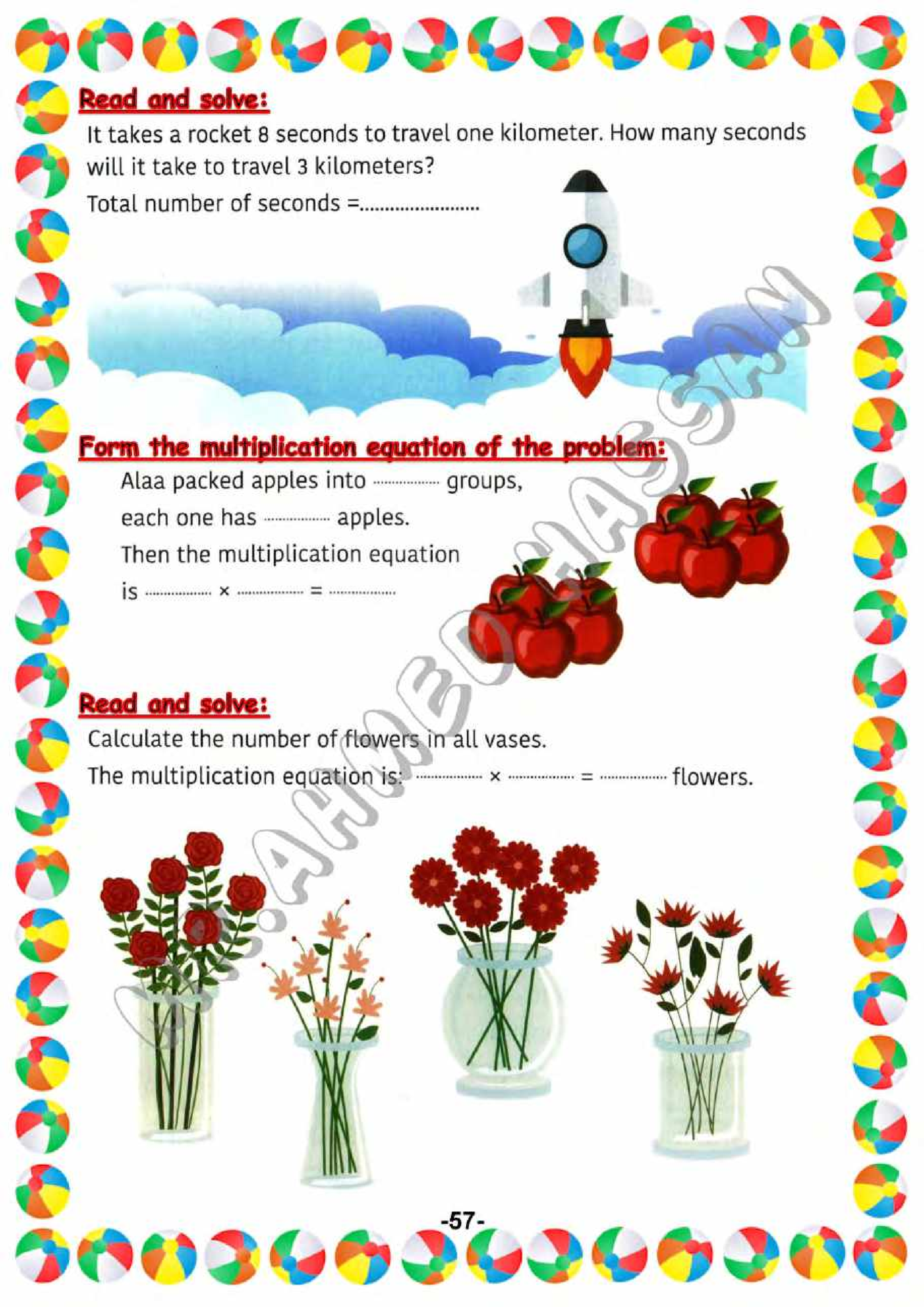
Read and solve:

A pencil case contains 6 colored pencils. How many colored pencils are there in 4 pencil cases?

The total number of colored pencils = ... groups of ....

.... x .... = ...





Read and solve:

It takes a rocket 8 seconds to travel one kilometer. How many seconds will it take to travel 3 kilometers?

Total number of seconds =........................

Form the multiplication equation of the problem:

Alaa packed apples into .... groups,

each one has .... apples.

Then the multiplication equation

is .... × .... = ...

Read and solve:

Calculate the number of flowers in all vases.

The multiplication equation is: .... × .... = ... flowers.



Complete the story problem:

Maged's father bought .... teddy bears

each one cost L.E. ....

How much money did Maged's

father pay?

The multiplication is:

.... × .... = L.E. ....

Draw using the following items (balls and boxes), then write a story problem for the given multiplication equation:

$4 \times 5 = 20$

Read and match:

a) Ahmed has 4 boxes of chocolate; each box has 7 bars. How many bars of chocolate are there in all the boxes?

b) Tony bought 6 sandwiches of L.E. 5. each. How much money did Tony pay?

c) Amir walks on the track 7 times a day. How many times does he walk in 5 days?

$5 \times 7 = 35$

$4 \times 7 = 28$

$6 \times 5 = 30$

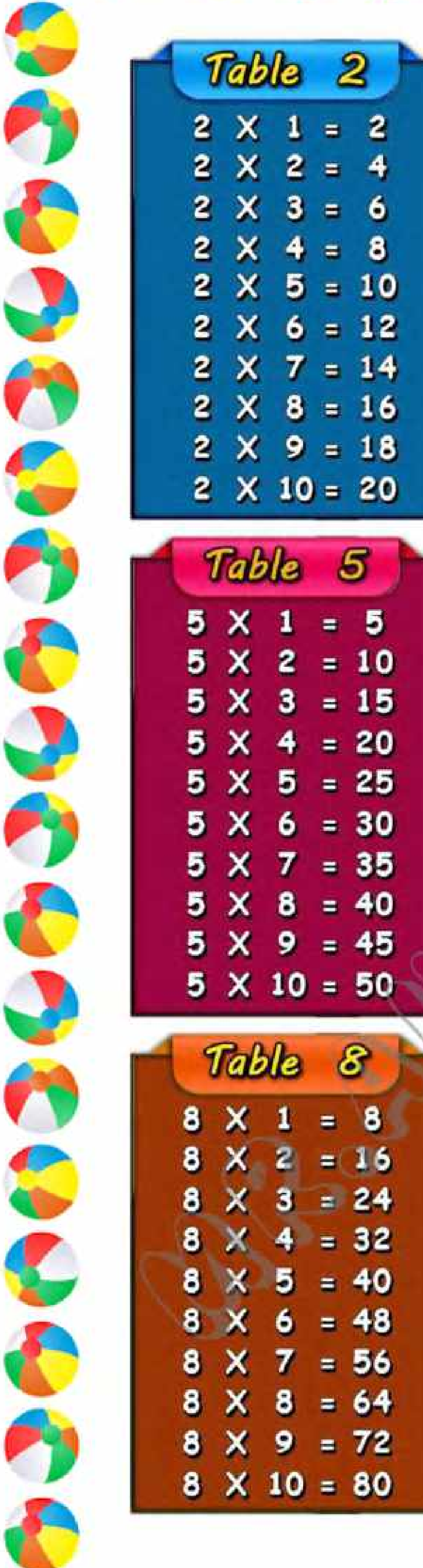


Table 2

2 X 1 = 2
2 X 2 = 4
2 X 3 = 6
2 X 4 = 8
2 X 5 = 10
2 X 6 = 12
2 X 7 = 14
2 X 8 = 16
2 X 9 = 18
2 X 10 = 20

Table 3

3 X 1 = 3
3 X 2 = 6
3 X 3 = 9
3 X 4 = 12
3 X 5 = 15
3 X 6 = 18
3 X 7 = 21
3 X 8 = 24
3 X 9 = 27
3 X 10 = 30

Table 4

4 X 1 = 4
4 X 2 = 8
4 X 3 = 12
4 X 4 = 16
4 X 5 = 20
4 X 6 = 24
4 X 7 = 28
4 X 8 = 32
4 X 9 = 36
4 X 10 = 40

Table 5

5 X 1 = 5
5 X 2 = 10
5 X 3 = 15
5 X 4 = 20
5 X 5 = 25
5 X 6 = 30
5 X 7 = 35
5 X 8 = 40
5 X 9 = 45
5 X 10 = 50

Table 6

6 X 1 = 6
6 X 2 = 12
6 X 3 = 18
6 X 4 = 24
6 X 5 = 30
6 X 6 = 36
6 X 7 = 42
6 X 8 = 48
6 X 9 = 54
6 X 10 = 60



Table 7

7 X 1 = 7
7 X 2 = 14
7 X 3 = 21
7 X 4 = 28
7 X 5 = 35
7 X 6 = 42
7 X 7 = 49
7 X 8 = 56
7 X 9 = 63
7 X 10 = 70



Table 8

8 X 1 = 8
8 X 2 = 16
8 X 3 = 24
8 X 4 = 32
8 X 5 = 40
8 X 6 = 48
8 X 7 = 56
8 X 8 = 64
8 X 9 = 72
8 X 10 = 80

Table 9

9 X 1 = 9
9 X 2 = 18
9 X 3 = 27
9 X 4 = 36
9 X 5 = 45
9 X 6 = 54
9 X 7 = 63
9 X 8 = 72
9 X 9 = 81
9 X 10 = 90

Any number X 0 = 0

Any number X 1 = the same number

3 X 5 = 5 + 5 + 5

Or

3 X 5 = 3 + 3 + 3 + 3 + 3



Lesson 23: Multiples of 2 and 3



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120



We notice that:

the numbers which are colored in both pink and blue are multiples of 2 and multiples of 3.

So, these numbers are called common multiples (6, 12, 18, ...).

Multiplication facts

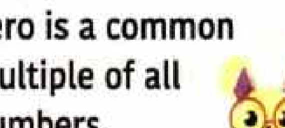
First

2 × 0 = 0 because we have 2 group of 0

3 × 0 = 0

218 × 0 = 0

So, any number multiplied by zero equals zero.



Notice that:

Zero is a common multiple of all numbers.

Second

2 × 1 = 2 because we have 2 group of 1

3 × 1 = 3

1638 × 1 = 1638

So, any number multiplied by 1 equal the same number.



We can represent skip counting by 2 and 3 as a multiplication equation:



Multiples of 2

$2 \times 0 = 0$
$2 \times 1 = 2$
$2 \times 2 = 4$
$2 \times 3 = 6$
$2 \times 4 = 8$
$2 \times 5 = 10$
$2 \times 6 = 12$
$2 \times 7 = 14$
$2 \times 8 = 16$
$2 \times 9 = 18$
$2 \times 10 = 20$

$2 \times 3 = 6$



Factor Factor Product

Multiples of 3

$3 \times 0 = 0$
$3 \times 1 = 3$
$3 \times 2 = 6$
$3 \times 3 = 9$
$3 \times 4 = 12$
$3 \times 5 = 15$
$3 \times 6 = 18$
$3 \times 7 = 21$
$3 \times 8 = 24$
$3 \times 9 = 27$
$3 \times 10 = 30$



Complete the multiplication equations to find the product:

a) $9 \times 1 =$ ....
b) $0 \times 20000 =$ ....
c) $2 \times 0 =$ ....
d) $1 \times 17 =$ ....
e) $7 \times 3 =$ ....
f) $5 \times 2 =$ ....
g) $3 \times 2 =$ ....
h) $2 \times 3 =$ ....
i) $3 \times 10 =$ ....
j) $2 \times 10 =$ ....



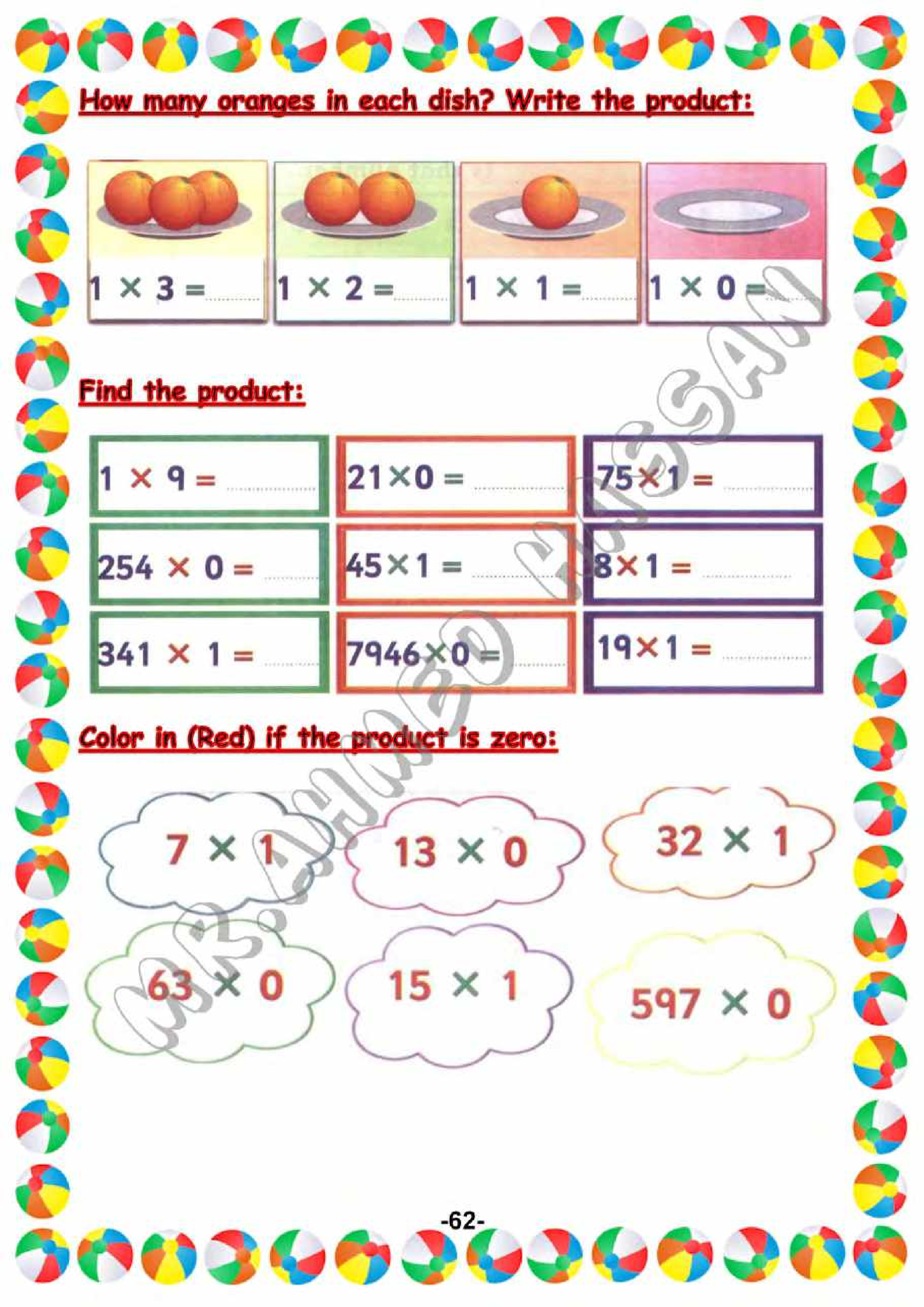
Find the factors and the product of each of the following equations:



a) $3 \times 5 = 15$
Factors are: .... , ...
Product = ...

b) $2 \times 8 = 16$
Factors are: .... , ...
Product = ...

c) $3 \times 4 = 12$
Factors are: .... , ...
Product = ...



How many oranges in each dish? Write the product:

1 × 3 = ...	1 × 2 = ...	1 × 1 = ...	1 × 0 = ...

Find the product:

1 × 9 = ...	21 × 0 = ...	75 × 1 = ...
254 × 0 = ...	45 × 1 = ...	8 × 1 = ...
341 × 1 = ...	7946 × 0 = ...	19 × 1 = ...

Color in (Red) if the product is zero:

7 × 1

13 × 0

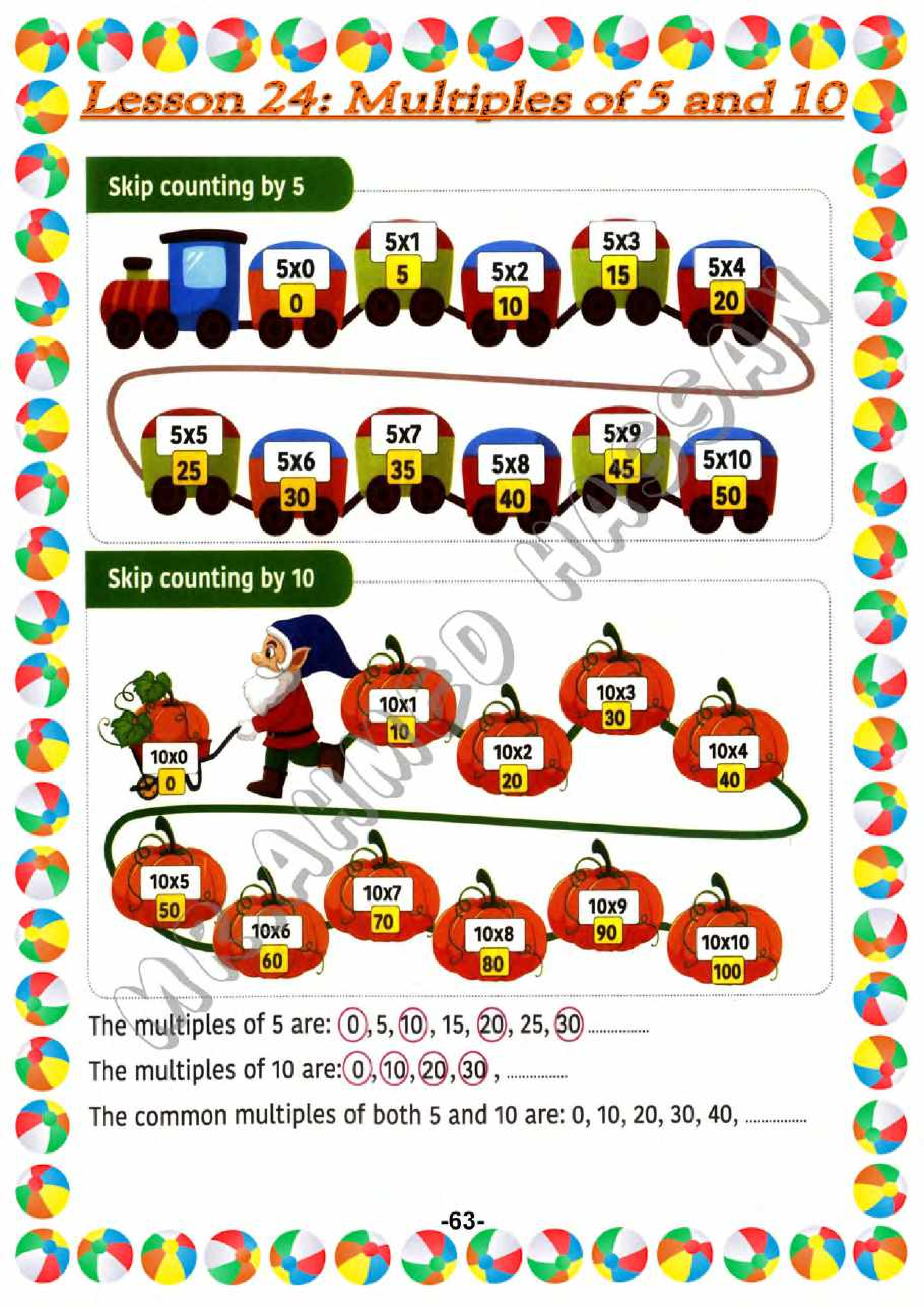
32 × 1

63 × 0

15 × 1

597 × 0

Lesson 24: Multiples of 5 and 10



The multiples of 5 are: 0, 5, 10, 15, 20, 25, 30 ....

The multiples of 10 are: 0, 10, 20, 30, ...

The common multiples of both 5 and 10 are: 0, 10, 20, 30, 40, ...

Color the multiples of 5 in green and the multiples of 10 in yellow:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

Then write the multiples of 5 and 10 which takes the two colors:

Common multiples of 5 and 10 are:

.... , ... , ... , ... , ...



Lesson 25: The Factors

How can we find the factors of a number?






$6 \times 1 = 6$
Factors are 6 & 1
Product is **6**

$2 \times 3 = 6$
Factors are 2 & 3
Product is **6**

$3 \times 2 = 6$
Factors are 3 & 2
Product is **6**

$1 \times 6 = 6$
Factors are 1 & 6
Product is **6**

So, the factors of 6 are 1, 6, 2 and 3.





$1 \times 4 = 4$
Factors are 1 & 4
Product is **4**

$2 \times 2 = 4$
Factors are 2 & 2
Product is **4**

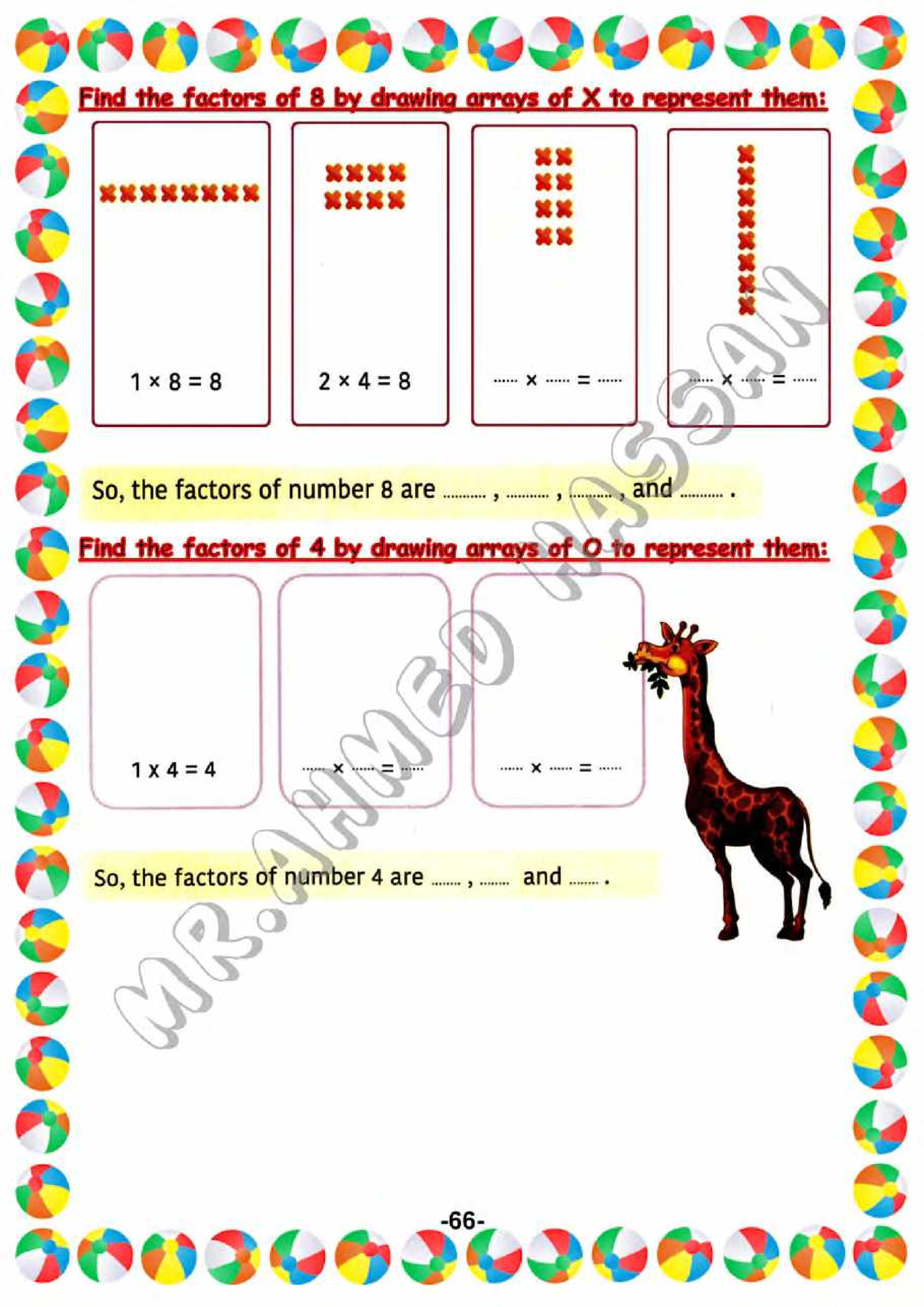
$4 \times 1 = 4$
Factors are 4 & 1
Product is **4**

So, the factors of 4 are 1 , 2 and 4
We don't take the repeated factors.

$2 \times 3 = 6$, $3 \times 2 = 6$
is called a **commutative property.**







Find the factors of 8 by drawing arrays of X to represent them:

$1 \times 8 = 8$	$2 \times 4 = 8$	...... × ...... = ...	...... × ...... = ...

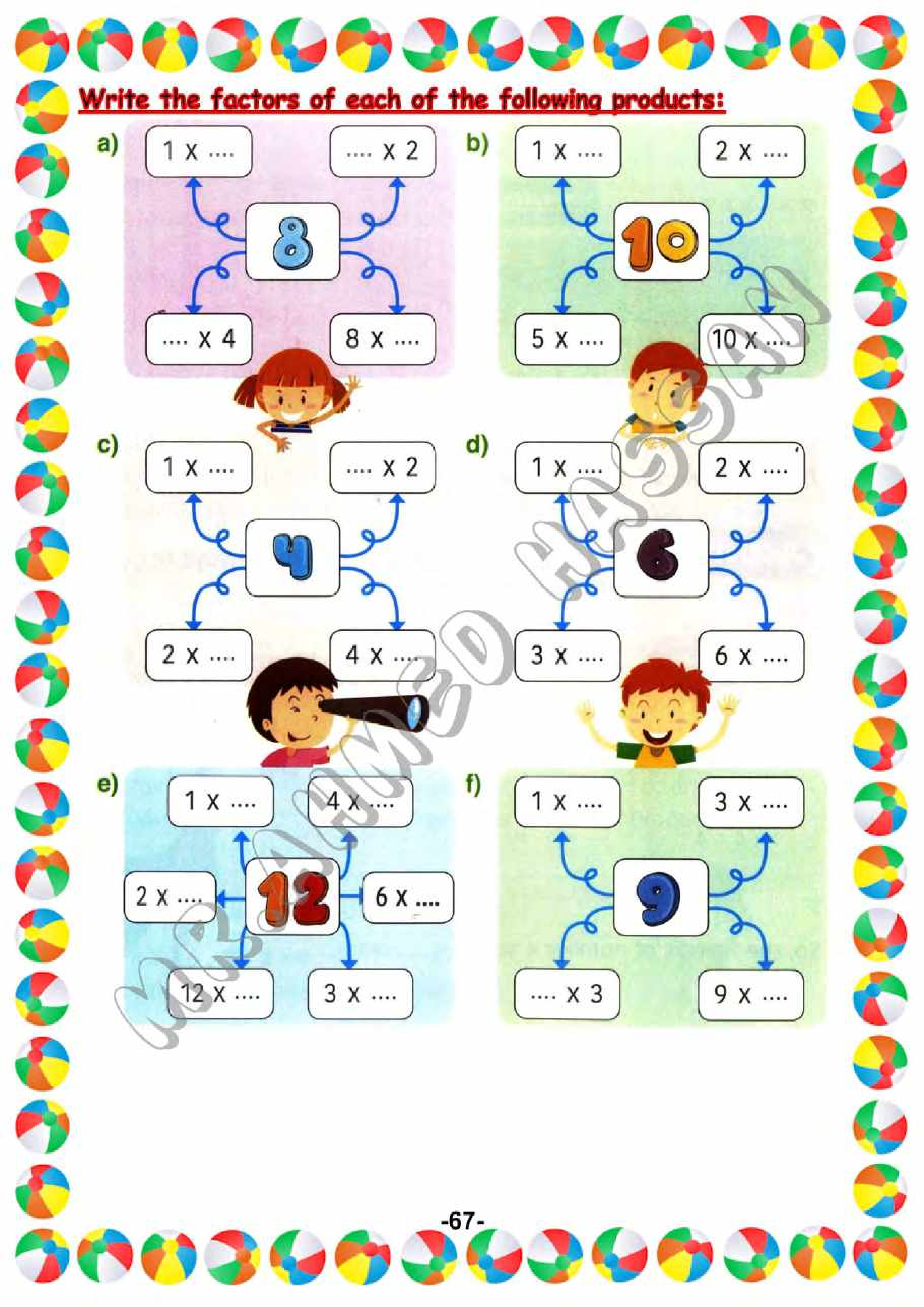
So, the factors of number 8 are .... , ... , ... , and ....

Find the factors of 4 by drawing arrays of O to represent them:

$1 \times 4 = 4$	...... × ...... = ...	...... × ...... = ...

So, the factors of number 4 are .... , ... and ....

Write the factors of each of the following products:



Lessons 26-27: Read and write digital time

Reading the clock



It is 4 o'clock.

It is a quarter after 4.

It is half past 4.

It is a quarter to 4.

It is 5 o'clock.

15 minutes

30 minutes

45 minutes

60 minutes

The parts of the clock:

Hour hand

The short hand refers to hours.

Minute hand

The long hand refers to minutes.

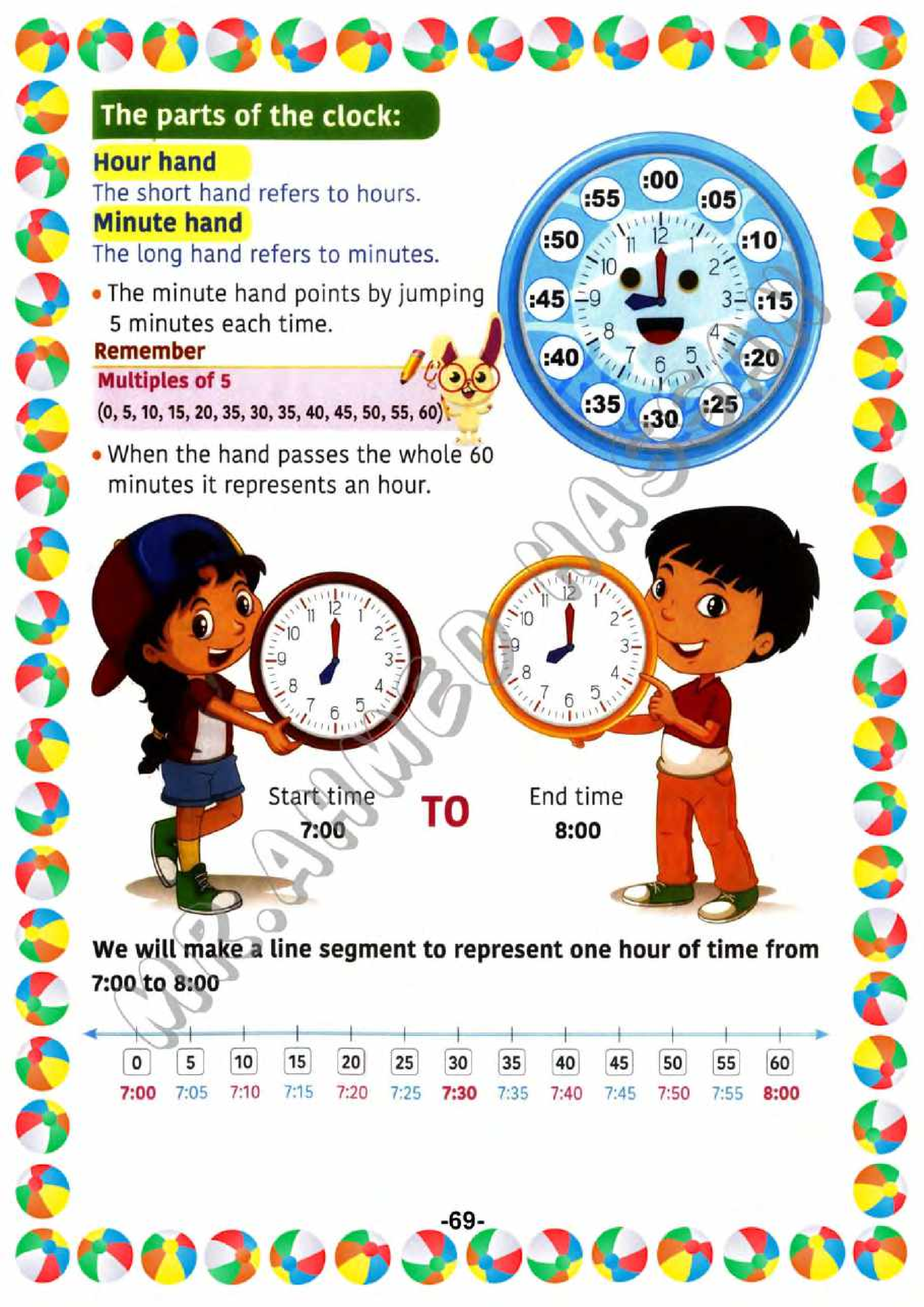
- The minute hand points by jumping 5 minutes each time.

Remember

Multiples of 5

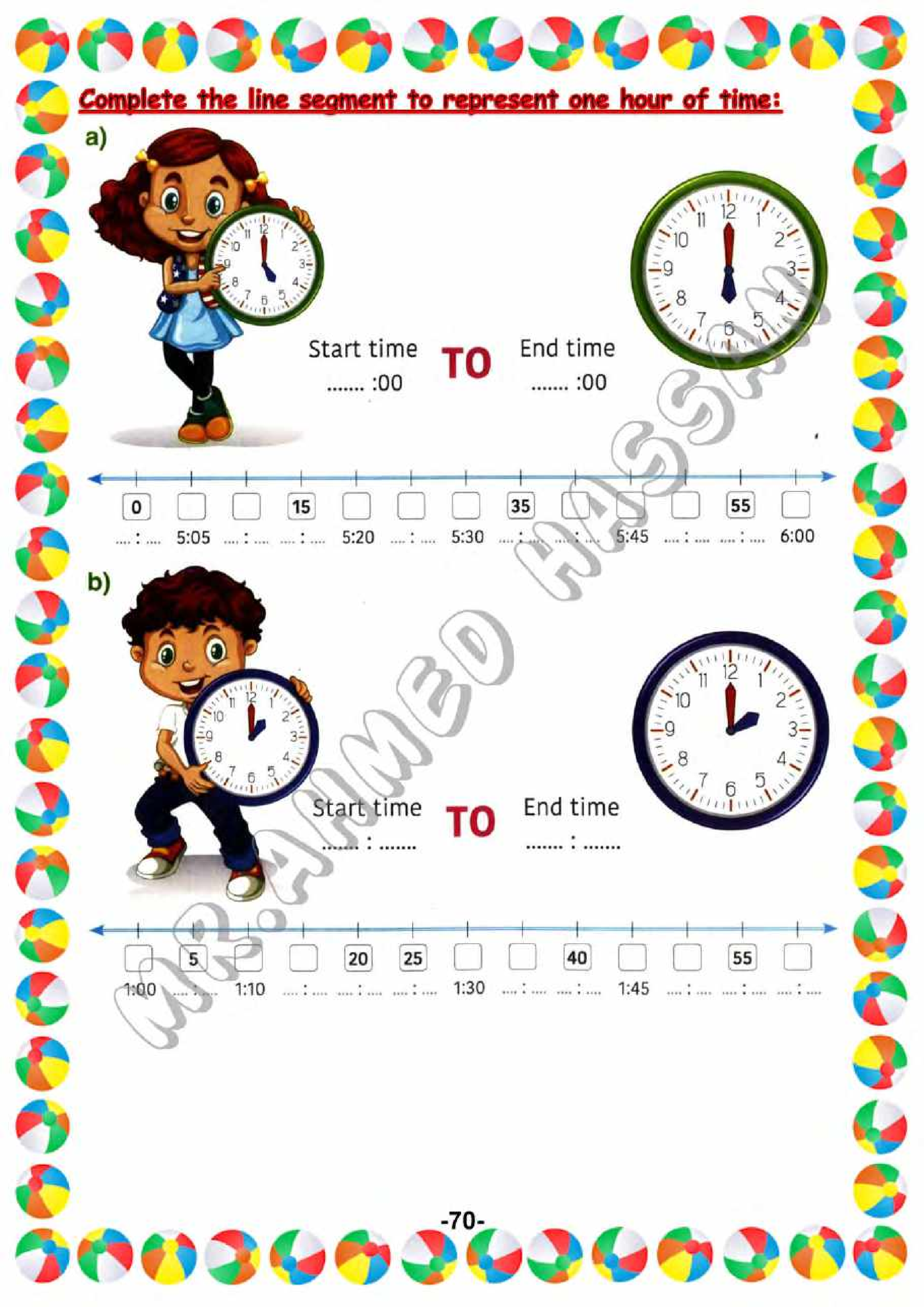
(0, 5, 10, 15, 20, 35, 30, 35, 40, 45, 50, 55, 60)

- When the hand passes the whole 60 minutes it represents an hour.



We will make a line segment to represent one hour of time from 7:00 to 8:00

0	5	10	15	20	25	30	35	40	45	50	55	60
7:00	7:05	7:10	7:15	7:20	7:25	**7:30**	7:35	7:40	7:45	7:50	7:55	**8:00**



Complete the line segment to represent one hour of time:

a)

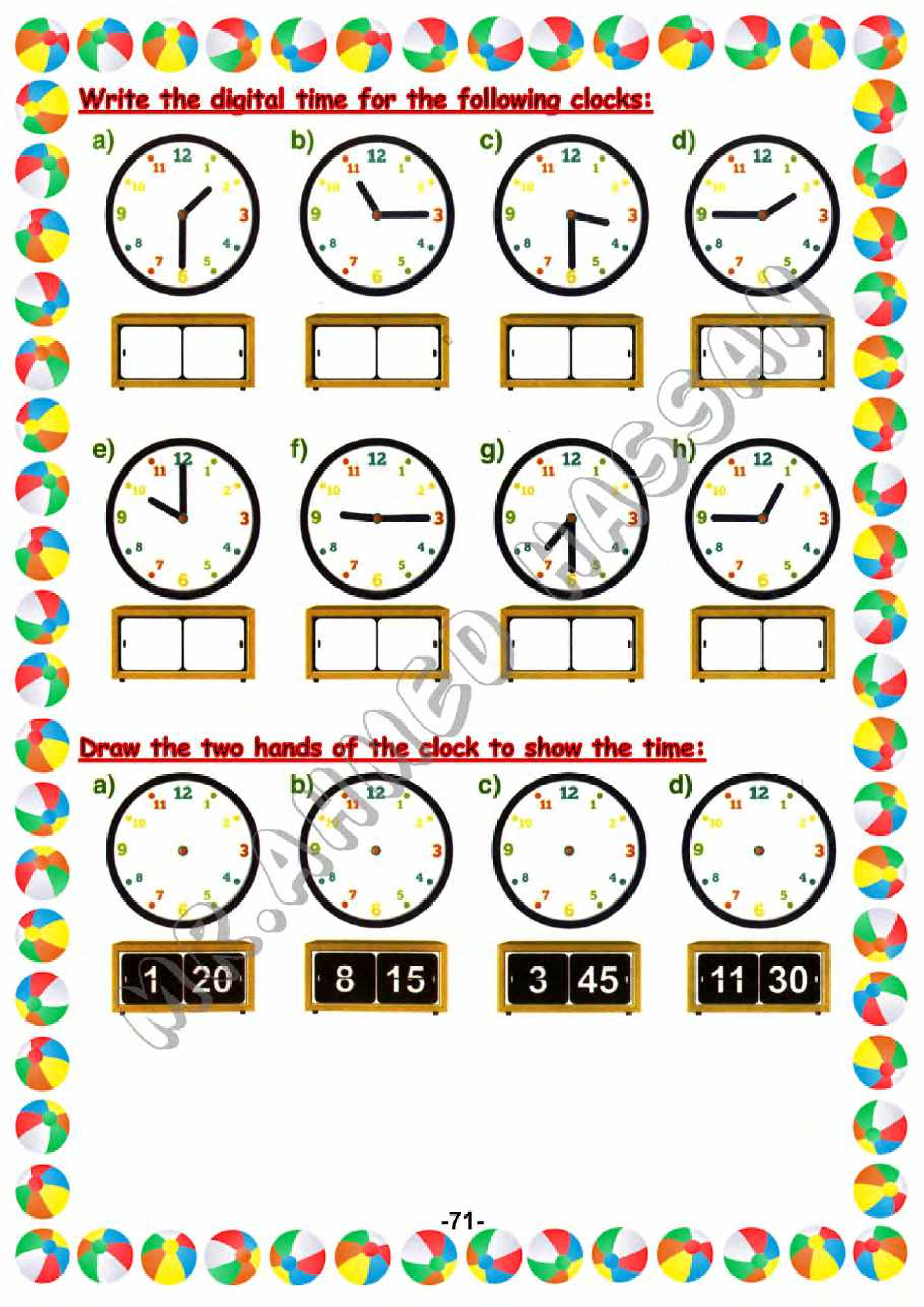
Start time .... :00 **TO** End time .... :00

0			15				35				55	
.... :	5:05	.... :	.... :	5:20	.... :	5:30	.... :	.... :	5:45	.... :	.... :	6:00

b)

Start time .... : .... **TO** End time .... : ....

	5			20	25			40			55	
1:00	.... :	1:10	.... :	.... :	.... :	1:30	.... :	.... :	1:45	.... :	.... :	.... : ....



Write the digital time for the following clocks:

a) b) c) d)

e) f) g) h)

Draw the two hands of the clock to show the time:

a) 1 20

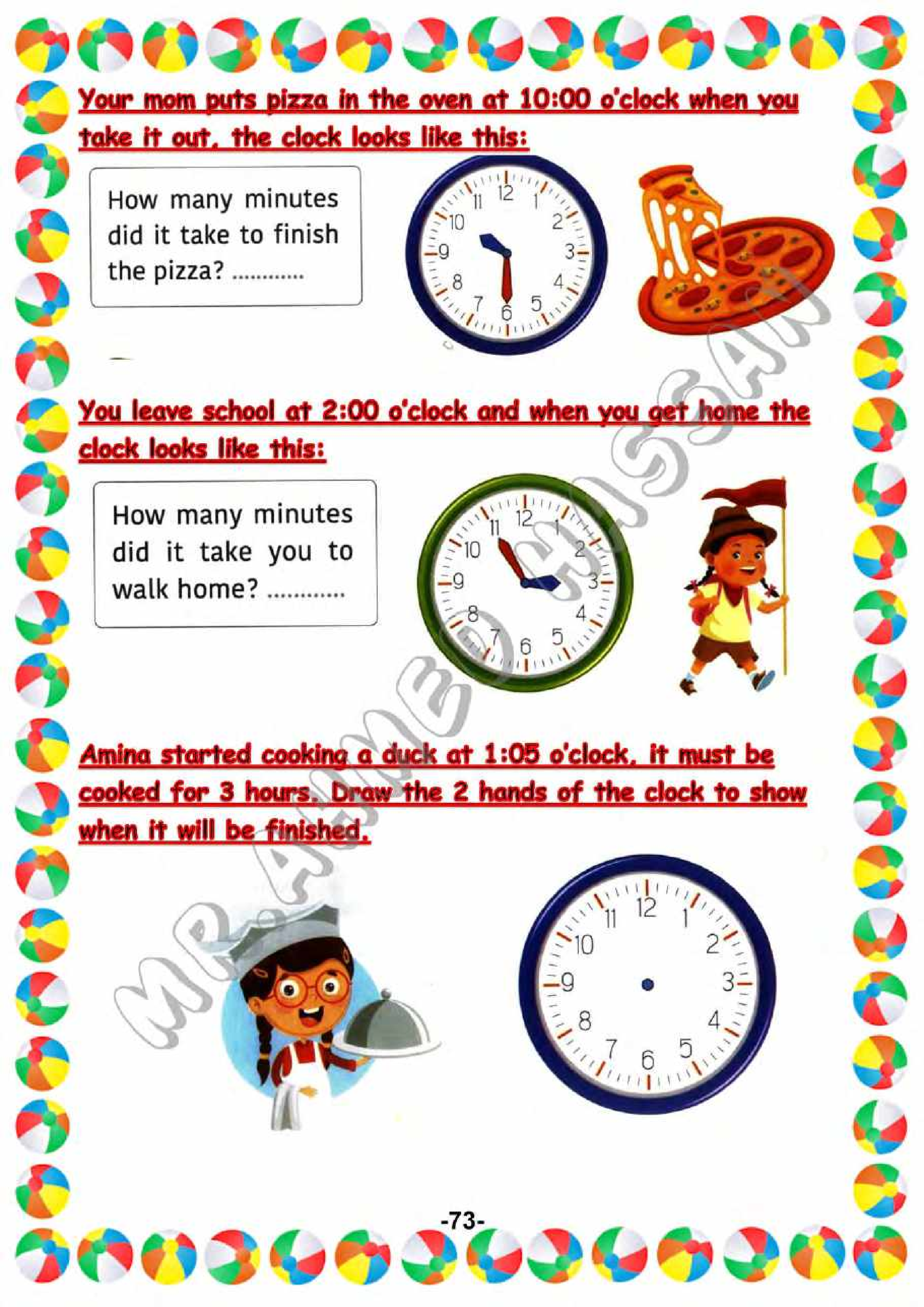
b) 8 15

c) 3 45

d) 11 30

Draw the hands of minutes on the analog clock according to the digital time:





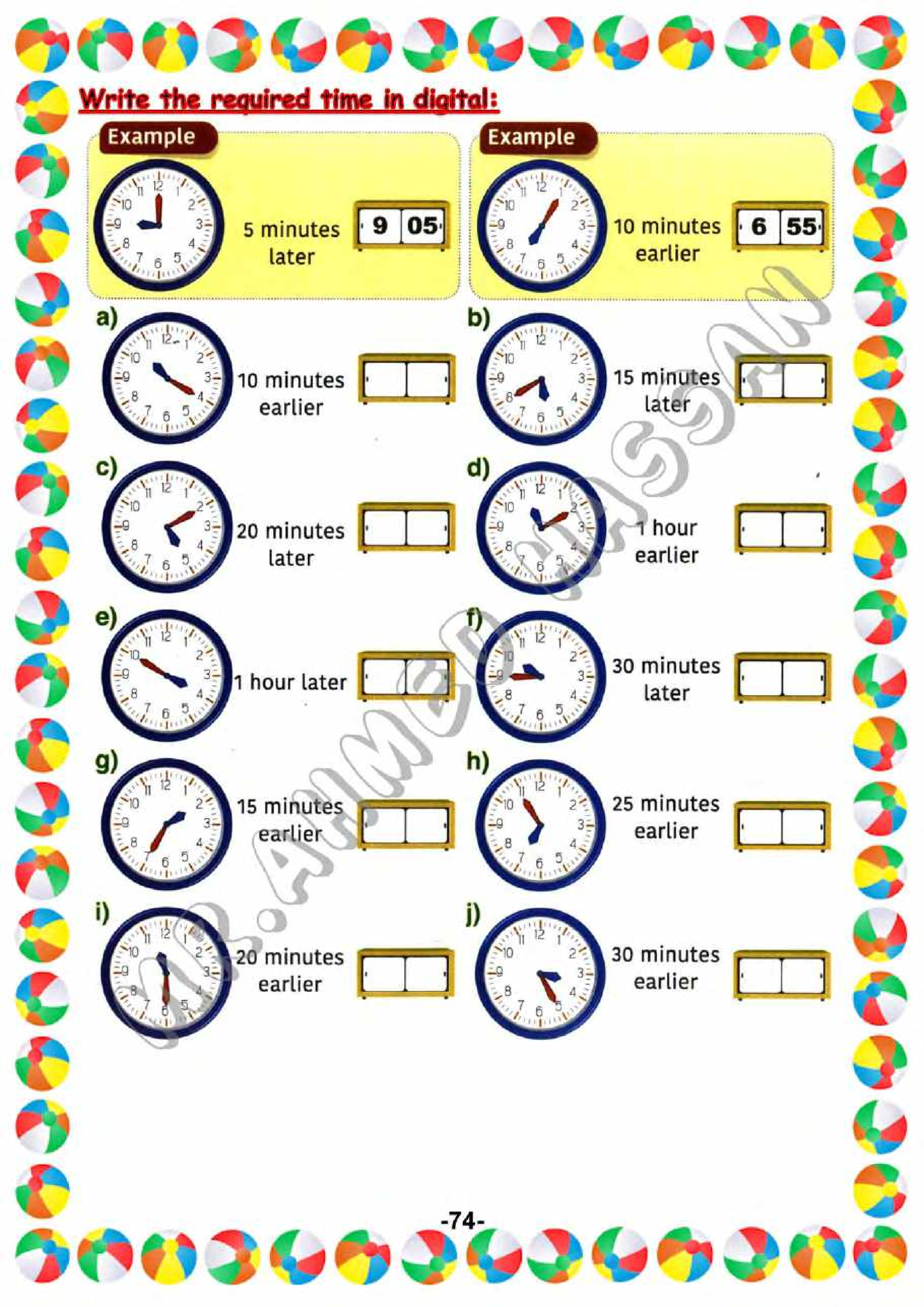
Your mom puts pizza in the oven at 10:00 o'clock when you take it out, the clock looks like this:

How many minutes did it take to finish the pizza? ....

You leave school at 2:00 o'clock and when you get home the clock looks like this:

How many minutes did it take you to walk home? ....

Amina started cooking a duck at 1:05 o'clock, it must be cooked for 3 hours. Draw the 2 hands of the clock to show when it will be finished.



Write the required time in digital:

Example

5 minutes later — 9 | 05

Example

10 minutes earlier — 6 | 55

a) 10 minutes earlier

b) 15 minutes later

c) 20 minutes later

d) 1 hour earlier

e) 1 hour later

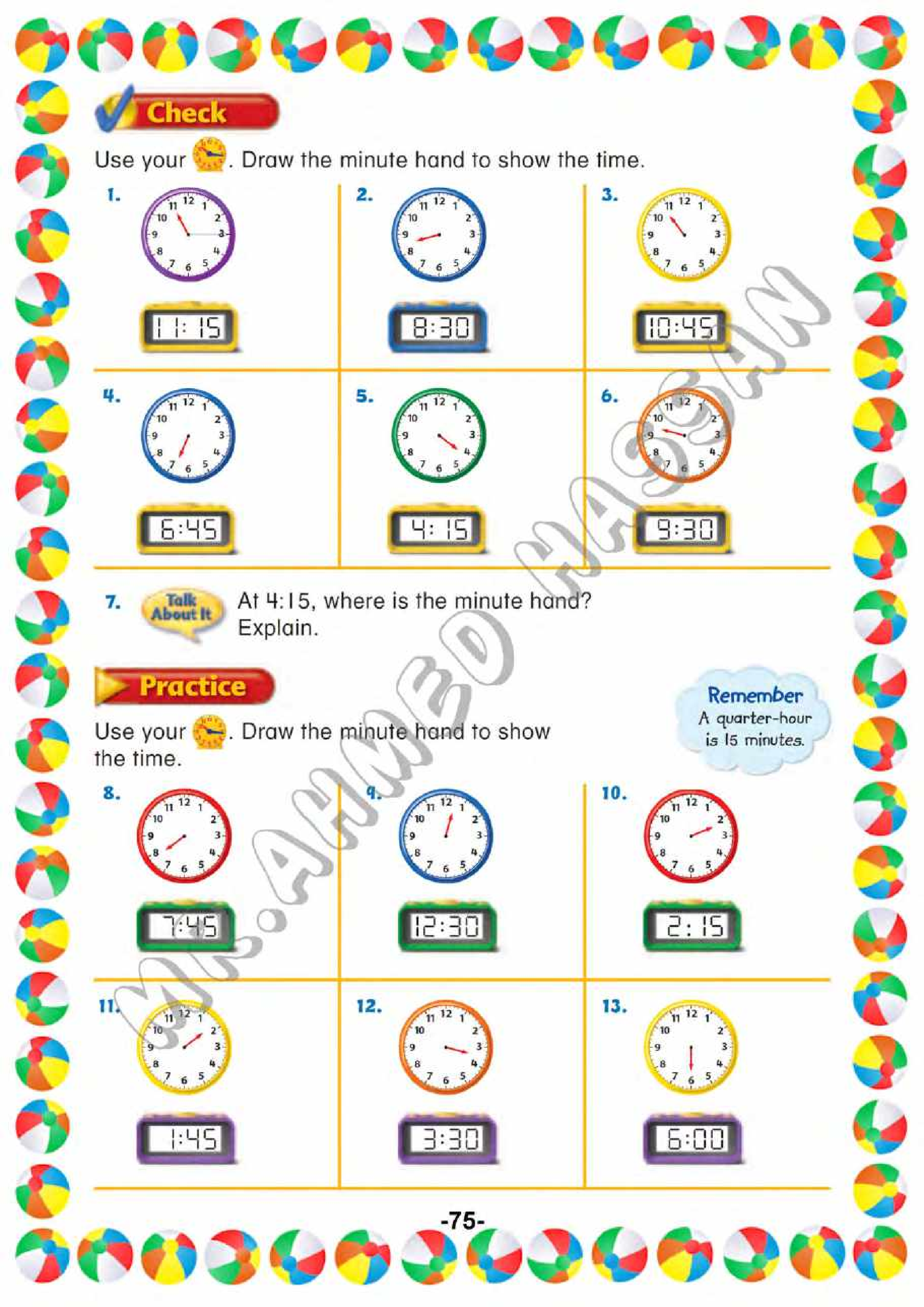
f) 30 minutes later

g) 15 minutes earlier

h) 25 minutes earlier

i) 20 minutes earlier

j) 30 minutes earlier



Check

Use your [clock]. Draw the minute hand to show the time.

1. 11:15
2. 8:30
3. 10:45
4. 6:45
5. 4:15
6. 9:30

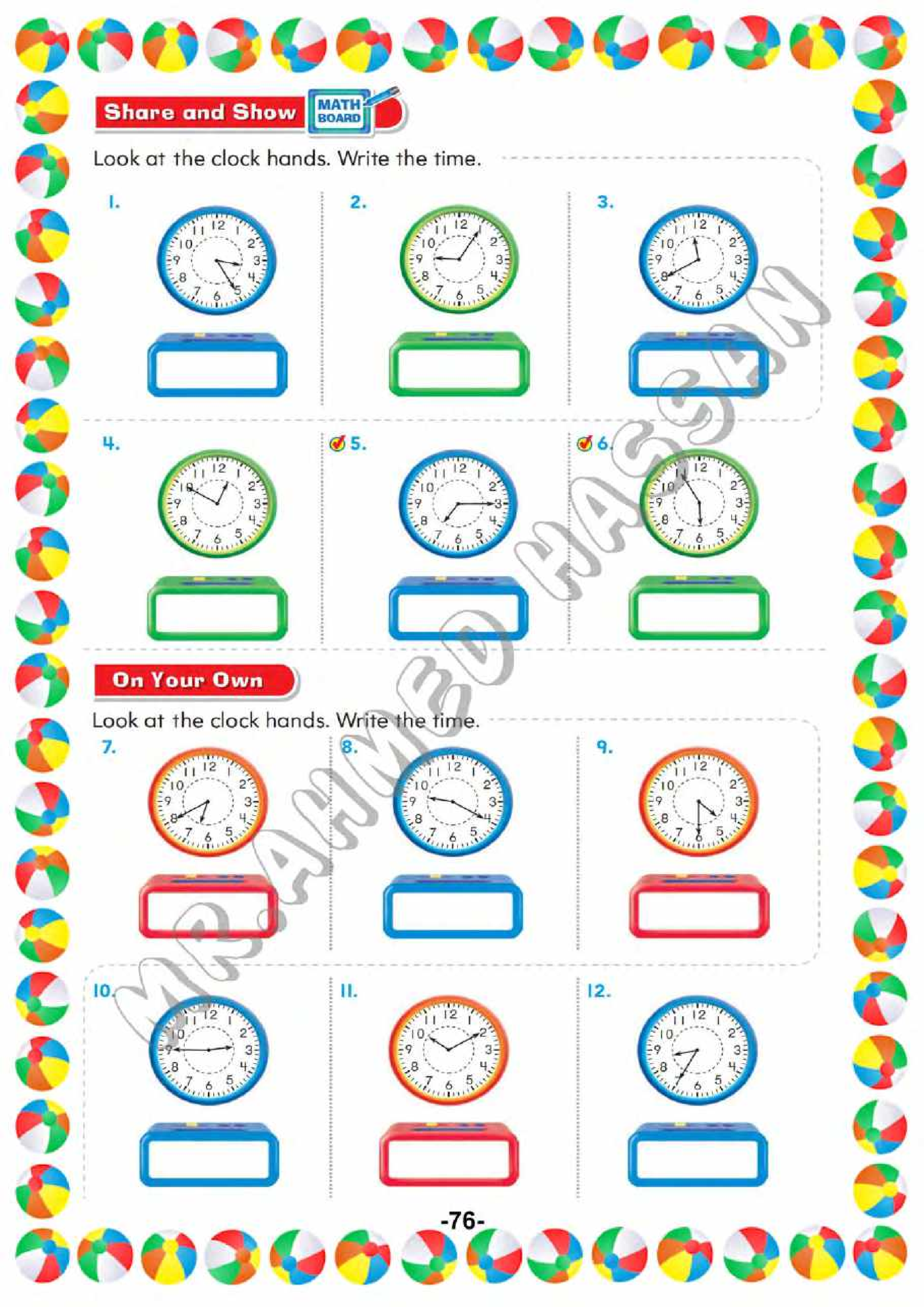
7. **Talk About It** At 4:15, where is the minute hand? Explain.

Practice

Use your [clock]. Draw the minute hand to show the time.

Remember
A quarter-hour is 15 minutes.

8. 7:45
9. 12:30
10. 2:15
11. 1:45
12. 3:30
13. 6:00



Share and Show MATH BOARD

Look at the clock hands. Write the time.

1.

2.

3.

4.

5.

6.

On Your Own

Look at the clock hands. Write the time.

7.

8.

9.

10.

11.

12.

Lessons 28-29: Dividing into equal groups



How can we share equally?

We have 6 pieces of gateaux and we want to share them equally between 2 children.

The equation can be written as $6 \div 2 = 3$

If six pieces of gateaux are divided into 2 equal groups, we get 3 pieces for each child.

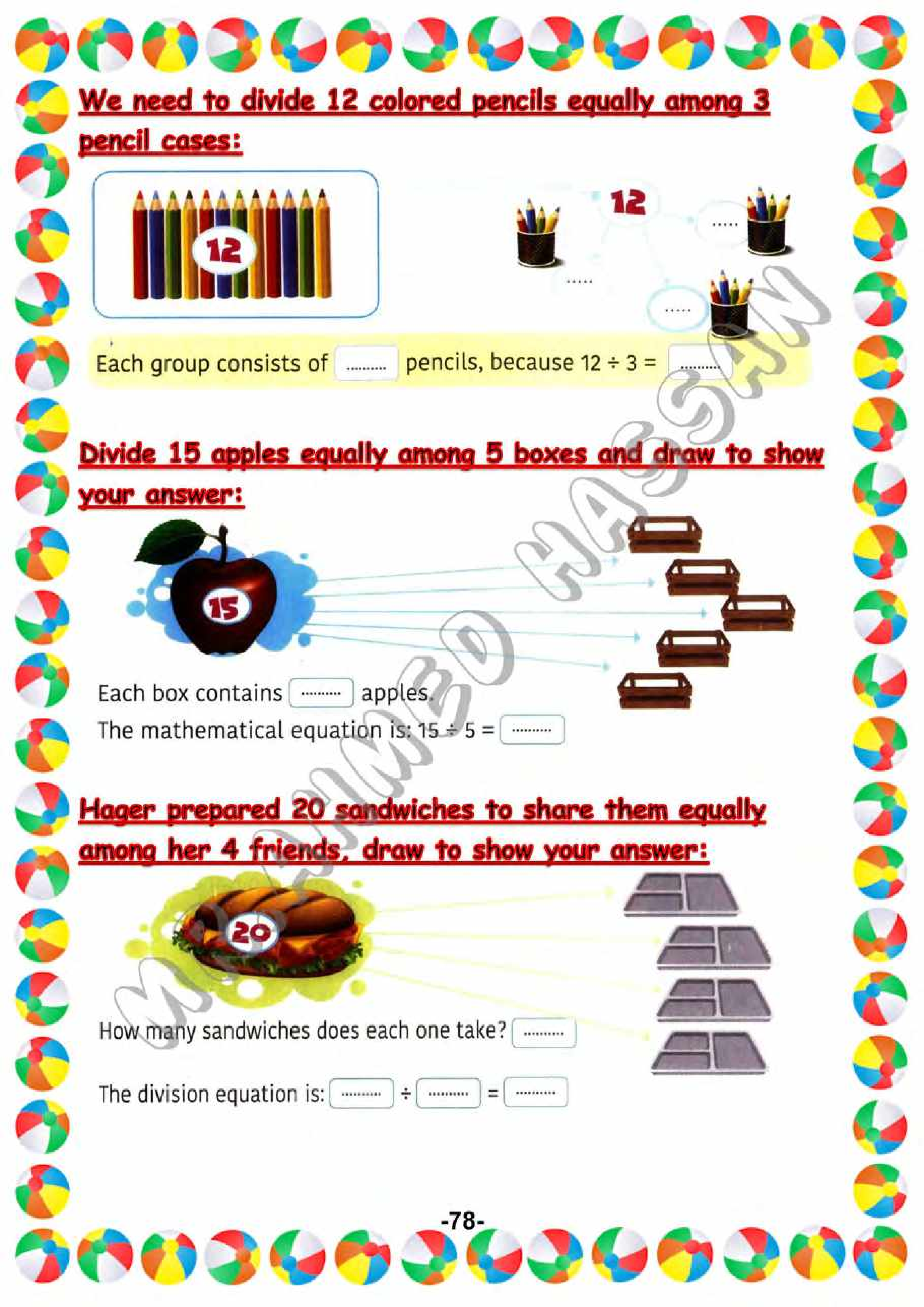
Dividing with a remainder

We have 14 balloons, we need to share them equally among Nesreen, Rania and Magda. How many balloons each one will have? How many balloons are left?

When we share the balloons equally we find out that we have 2 balloons are left over. We cannot share them on the 3 friends.

- The division equation is:

$14 \div 3 = 4$ and 2 balloons are leftover (remainder)



We need to divide 12 colored pencils equally among 3 pencil cases:

Each group consists of .... pencils, because 12 ÷ 3 = ...

Divide 15 apples equally among 5 boxes and draw to show your answer:

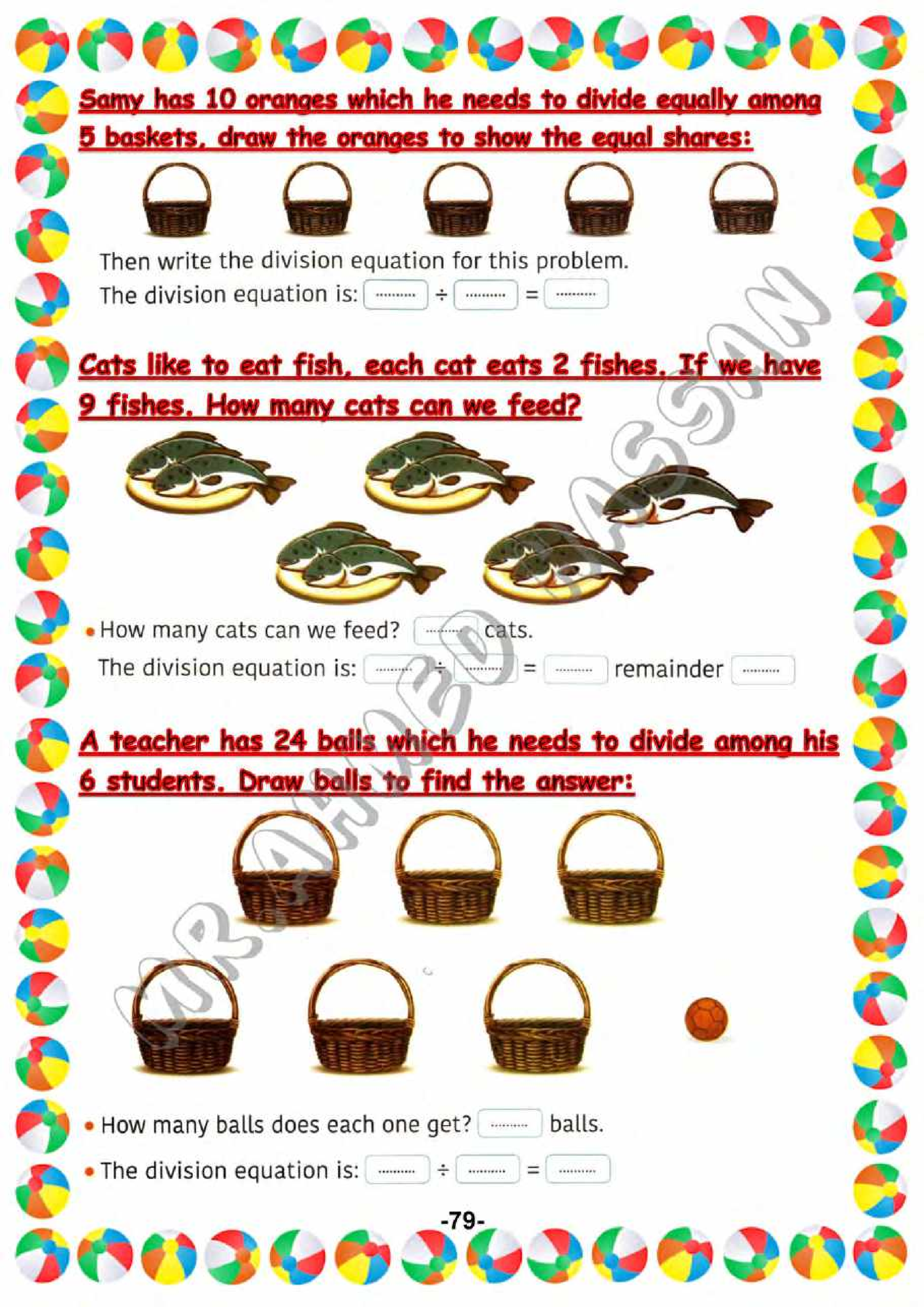
Each box contains .... apples.

The mathematical equation is: 15 ÷ 5 = ...

Hager prepared 20 sandwiches to share them equally among her 4 friends, draw to show your answer:

How many sandwiches does each one take? ....

The division equation is: .... ÷ .... = ...



Samy has 10 oranges which he needs to divide equally among 5 baskets, draw the oranges to show the equal shares:

Then write the division equation for this problem.

The division equation is: .... ÷ .... = ...

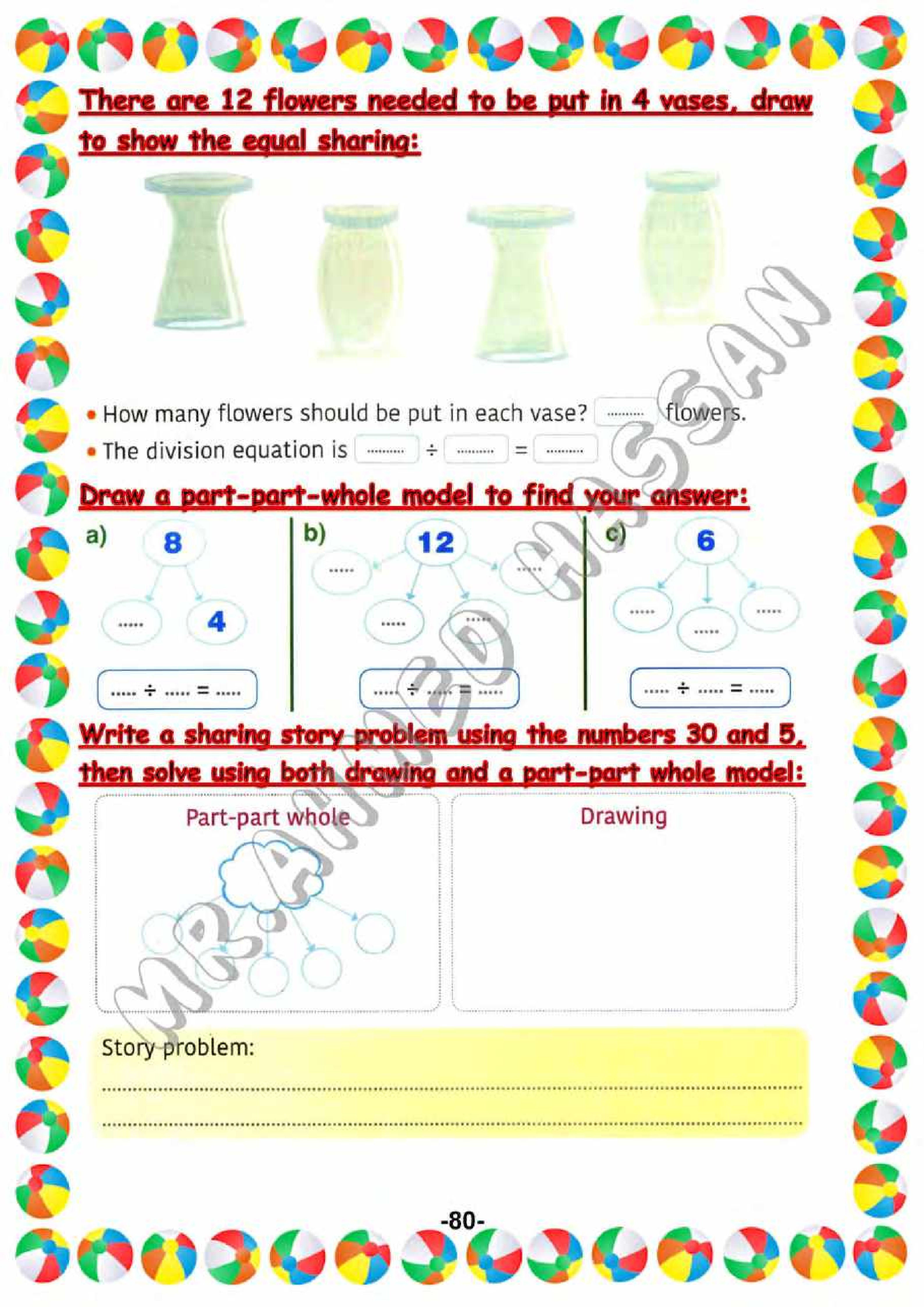
Cats like to eat fish, each cat eats 2 fishes. If we have 9 fishes. How many cats can we feed?

- How many cats can we feed? .... cats.

The division equation is: .... ÷ .... = ... remainder ....

A teacher has 24 balls which he needs to divide among his 6 students. Draw balls to find the answer:

- How many balls does each one get? .... balls.
- The division equation is: .... ÷ .... = ...



There are 12 flowers needed to be put in 4 vases, draw to show the equal sharing:

- How many flowers should be put in each vase? .... flowers.
- The division equation is .... ÷ .... = ...

Draw a part-part-whole model to find your answer:

a) 8 → ...... , 4

...... ÷ ...... = ...

b) 12 → ...... , ... , ... , ...

...... ÷ ...... = ...

c) 6 → ...... , ... , ...

...... ÷ ...... = ...

Write a sharing story problem using the numbers 30 and 5, then solve using both drawing and a part-part whole model:

Part-part whole	Drawing

Story problem:

....

....

Lesson 30: The relation between multiplication and dividision

We can use this fact family house to represent the relation between the 3 numbers

4 groups of 2

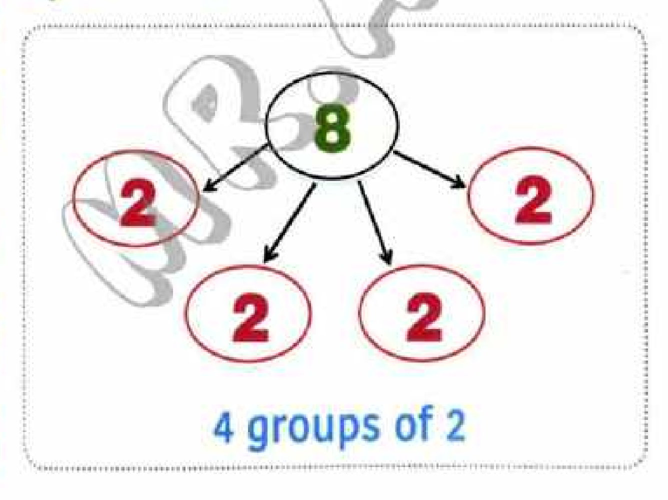
2 groups of 4

8

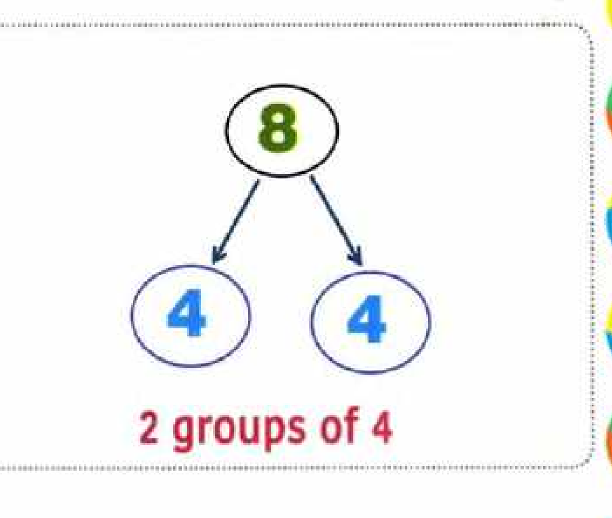
4 ×, ÷ 2

- 4 × 2 = 8
- 2 × 4 = 8
- 8 ÷ 2 = 4
- 8 ÷ 4 = 2

8, 2 and 4 are members of the multiplication and division fact family:



4 groups of 2



2 groups of 4



We have a group of 20 mangoes divided into 4 groups.

Complete the fact family:

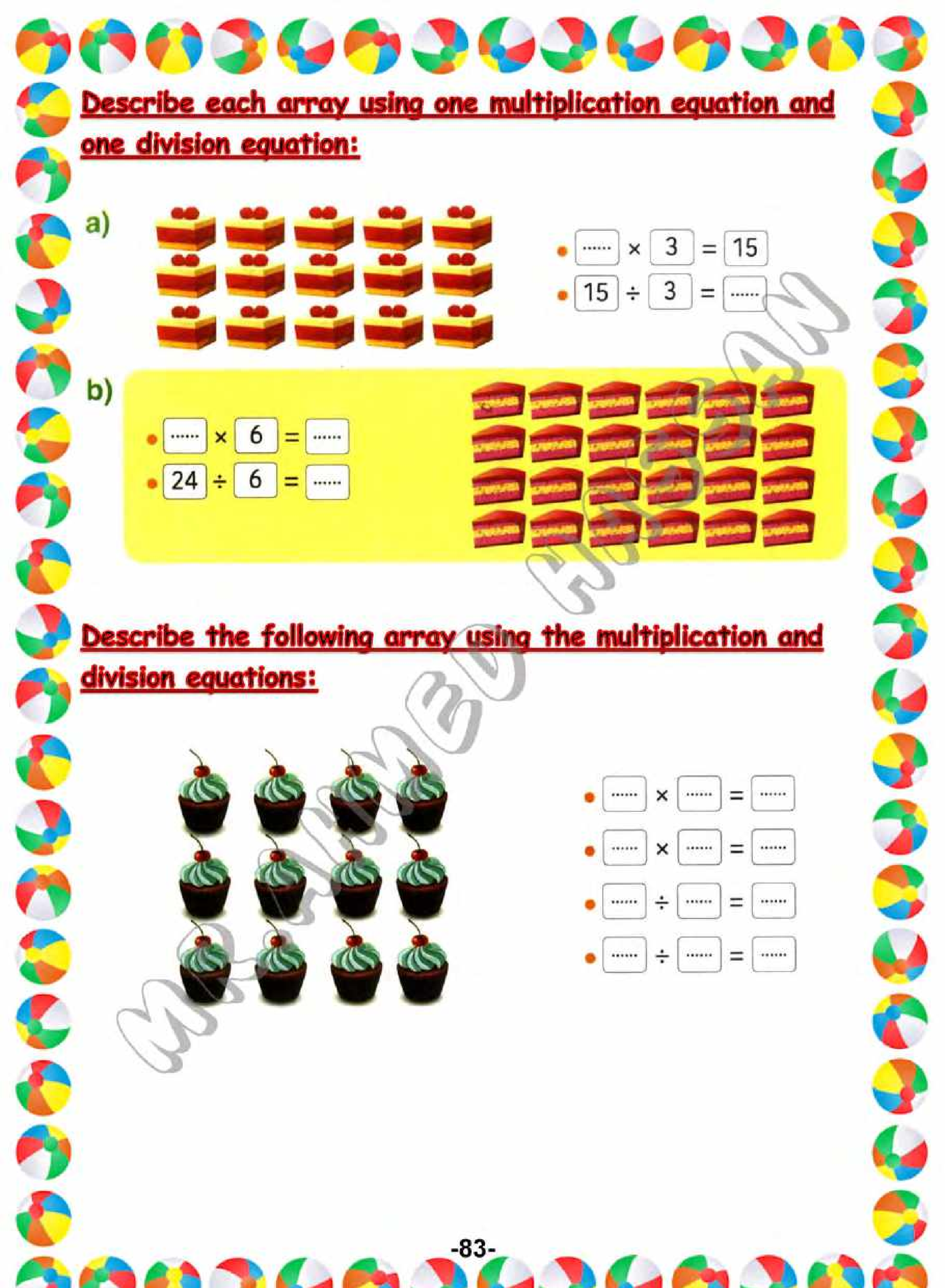
We have 4 group of 20 mangoes.

Write the missing numbers in each fact family:

a)

b)

c)



Describe each array using one multiplication equation and one division equation:

a)

- ...... × 3 = 15
- 15 ÷ 3 = ...

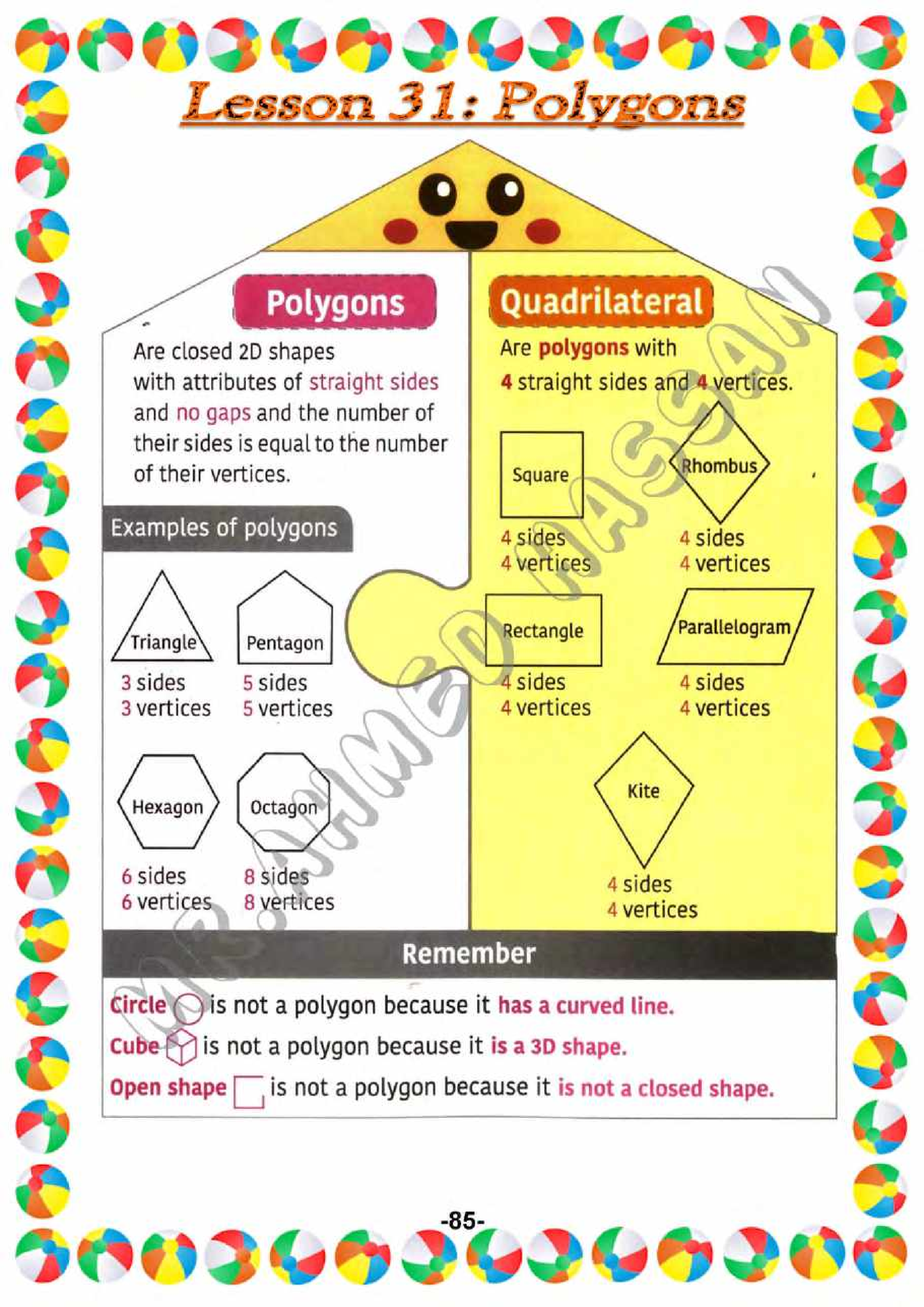
b)

- ...... × 6 = ...
- 24 ÷ 6 = ...

Describe the following array using the multiplication and division equations:

- ...... × ...... = ...
- ...... × ...... = ...
- ...... ÷ ...... = ...
- ...... ÷ ...... = ...


Write the missing factor in each triangle, then write the multiplication & division facts as the example:
24
6
4
6 × 4 = 24
4 × 6 = 24
24 ÷ 4 = 6
24 ÷ 4 = 4
18
3
3 × 6 = ...
6 × 3 = ...
18 ÷ ...... = ...
...... ÷ ...... = ...
28
4
4 × 7 = ...
7 × ...... = ...
28 ÷ ...... = ...
...... ÷ ...... = ...
21
7
54
6
15
3
...... × ...... = ...
...... × ...... = ...
...... ÷ ...... = ...
...... ÷ ...... = ...
32
4
36
9
20
10
...... × ...... = ...
...... × ...... = ...
...... ÷ ...... = ...
...... ÷ ...... = ...



Lesson 31: Polygons

Polygons

Are closed 2D shapes with attributes of straight sides and no gaps and the number of their sides is equal to the number of their vertices.

Examples of polygons

Triangle
3 sides
3 vertices

Pentagon
5 sides
5 vertices

Hexagon
6 sides
6 vertices

Octagon
8 sides
8 vertices

Quadrilateral

Are **polygons** with **4** straight sides and **4** vertices.

Square
4 sides
4 vertices

Rhombus
4 sides
4 vertices

Rectangle
4 sides
4 vertices

Parallelogram
4 sides
4 vertices

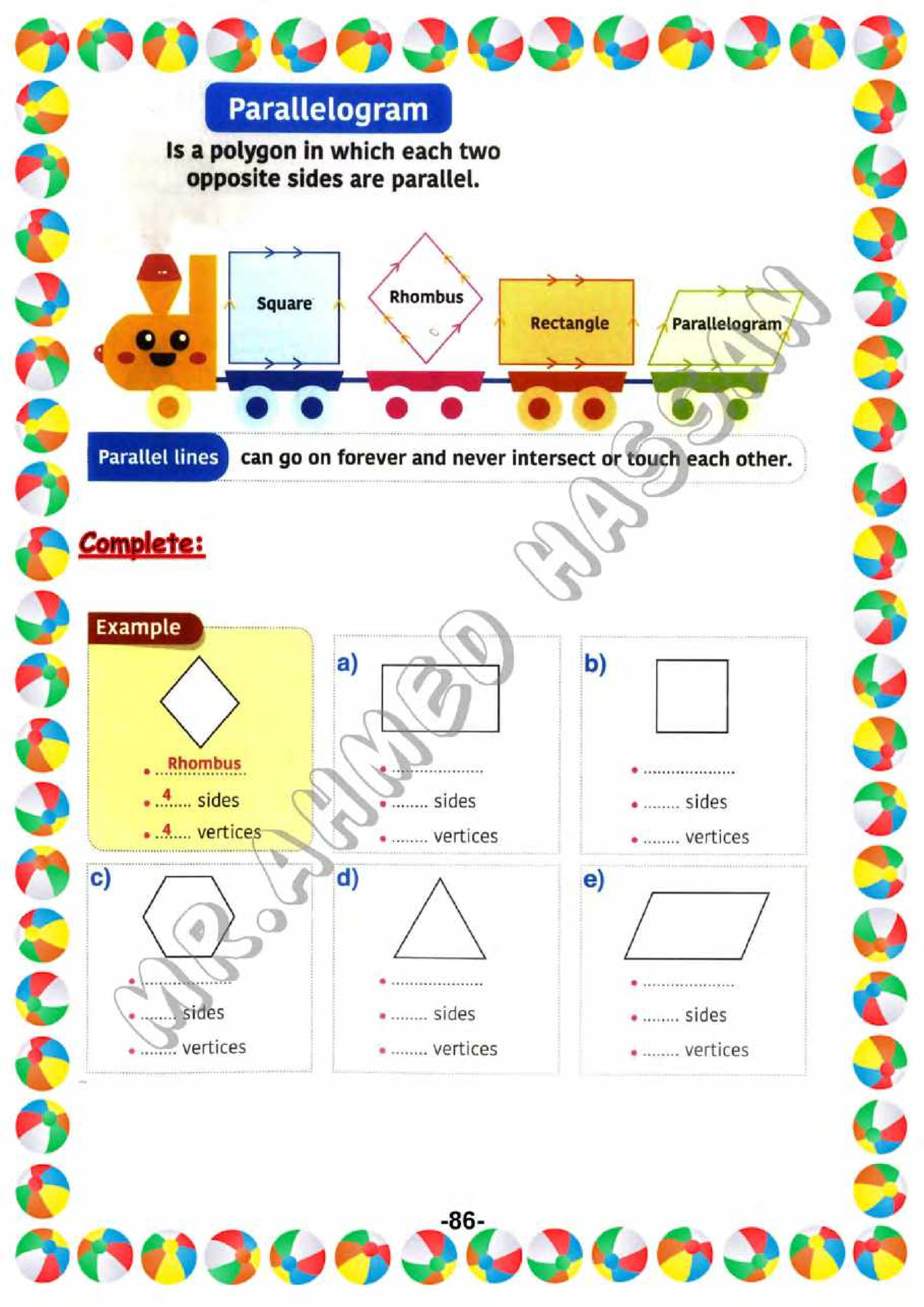
Kite
4 sides
4 vertices

Remember

Circle is not a polygon because it **has a curved line.**

Cube is not a polygon because it **is a 3D shape.**

Open shape is not a polygon because it **is not a closed shape.**



Parallelogram

Is a polygon in which each two opposite sides are parallel.

Parallel lines can go on forever and never intersect or touch each other.

Complete:

Example

- ...Rhombus...
- ..4..... sides
- ..4..... vertices

a)

- ....
- .... sides
- .... vertices

b)

- ....
- .... sides
- .... vertices

c)

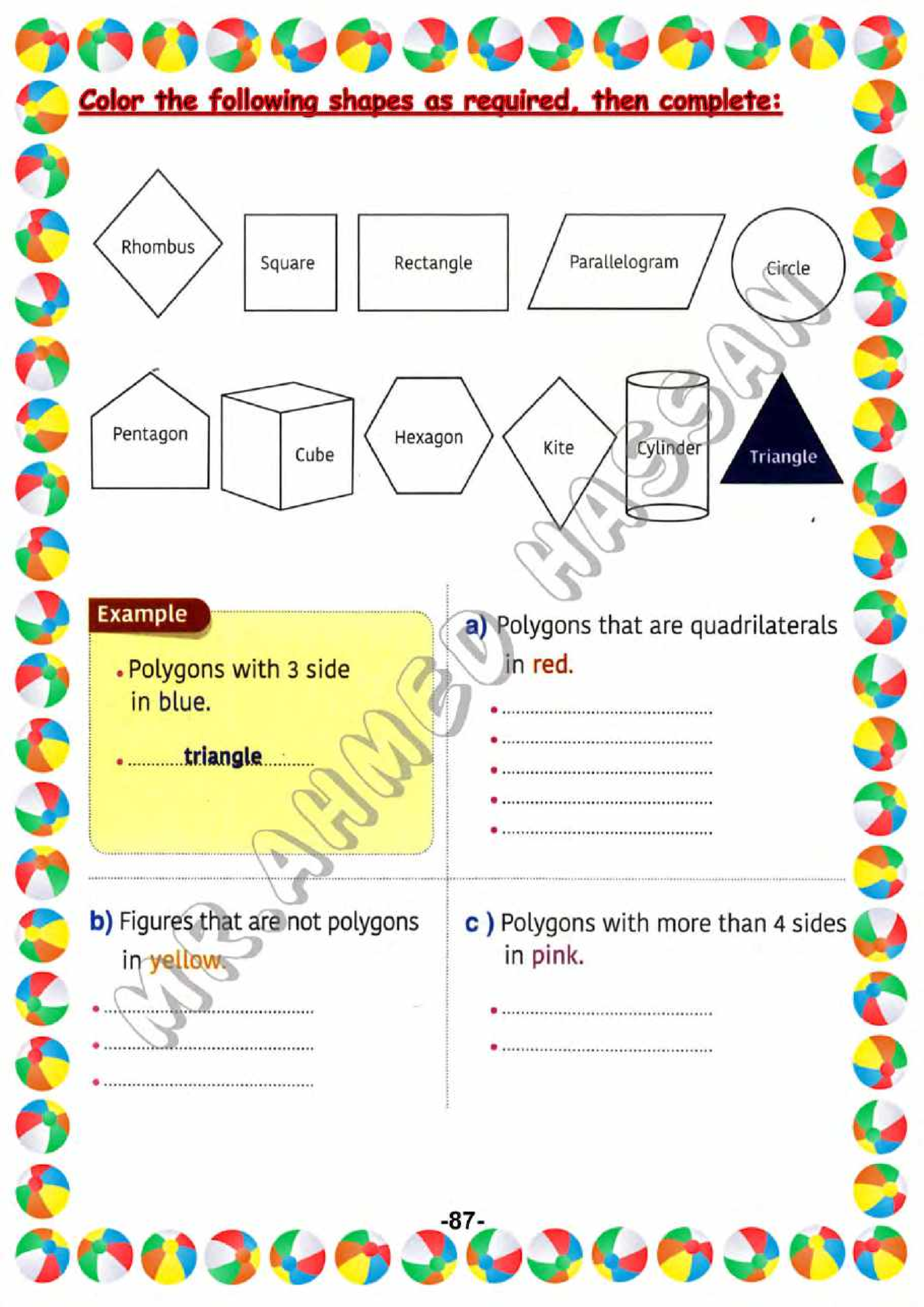
- ....
- .... sides
- .... vertices

d)

- ....
- .... sides
- .... vertices

e)

- ....
- .... sides
- .... vertices



Color the following shapes as required, then complete:

Example

- Polygons with 3 side in blue.
- ....triangle..........

a) Polygons that are quadrilaterals in red.

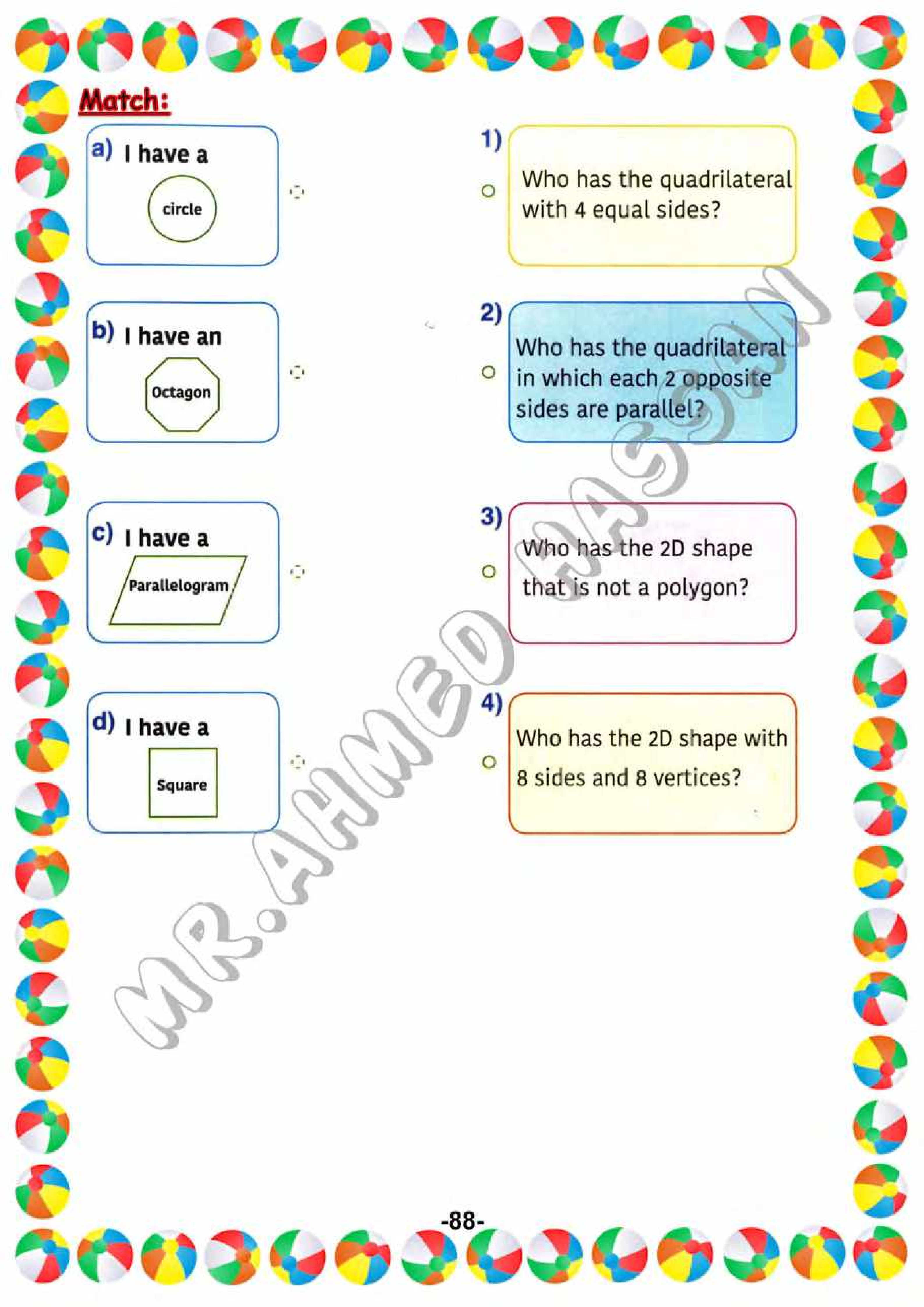
- ....
- ....
- ....
- ....
- ....

b) Figures that are not polygons in yellow.

- ....
- ....
- ....

c) Polygons with more than 4 sides in pink.

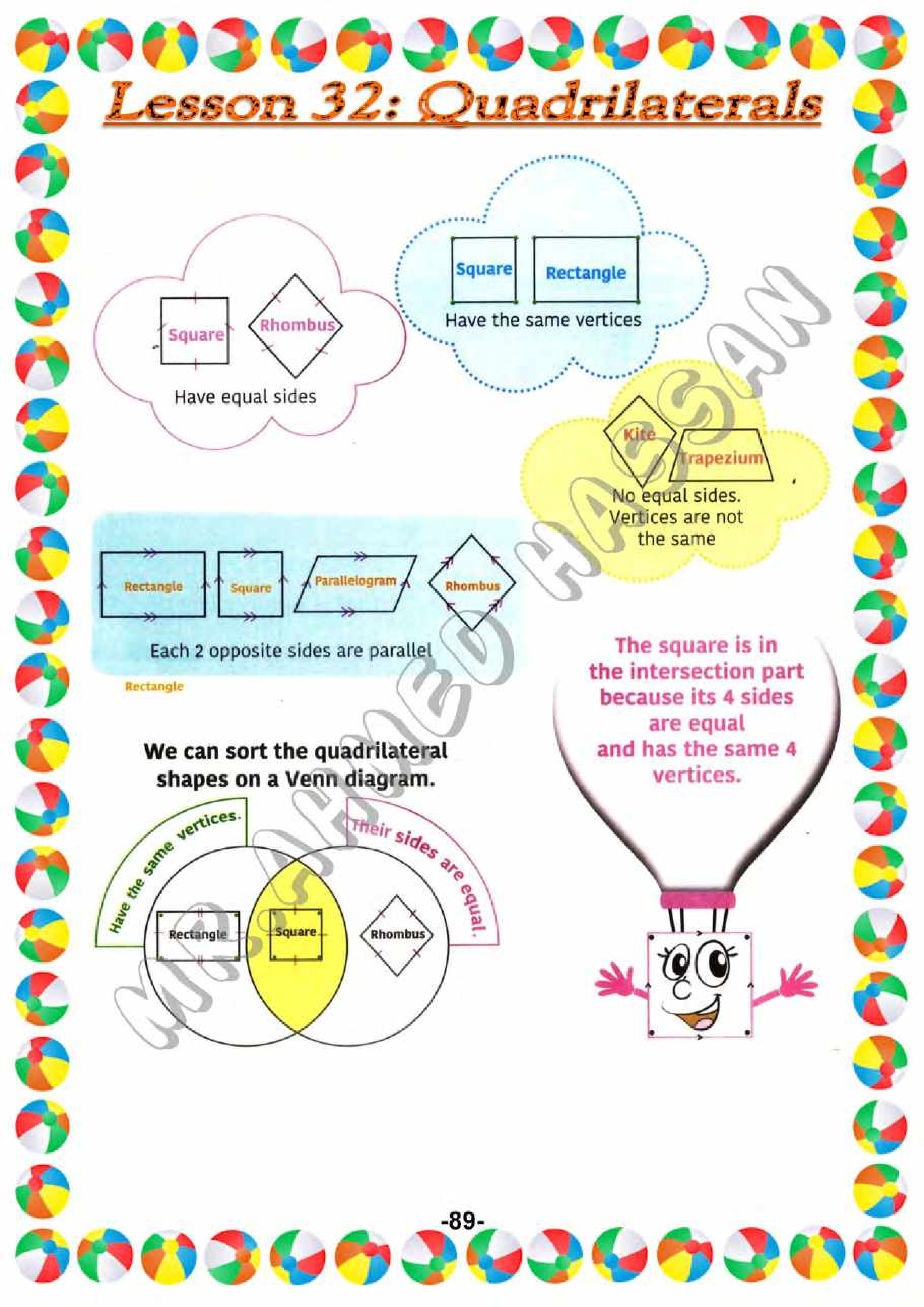
- ....
- ....

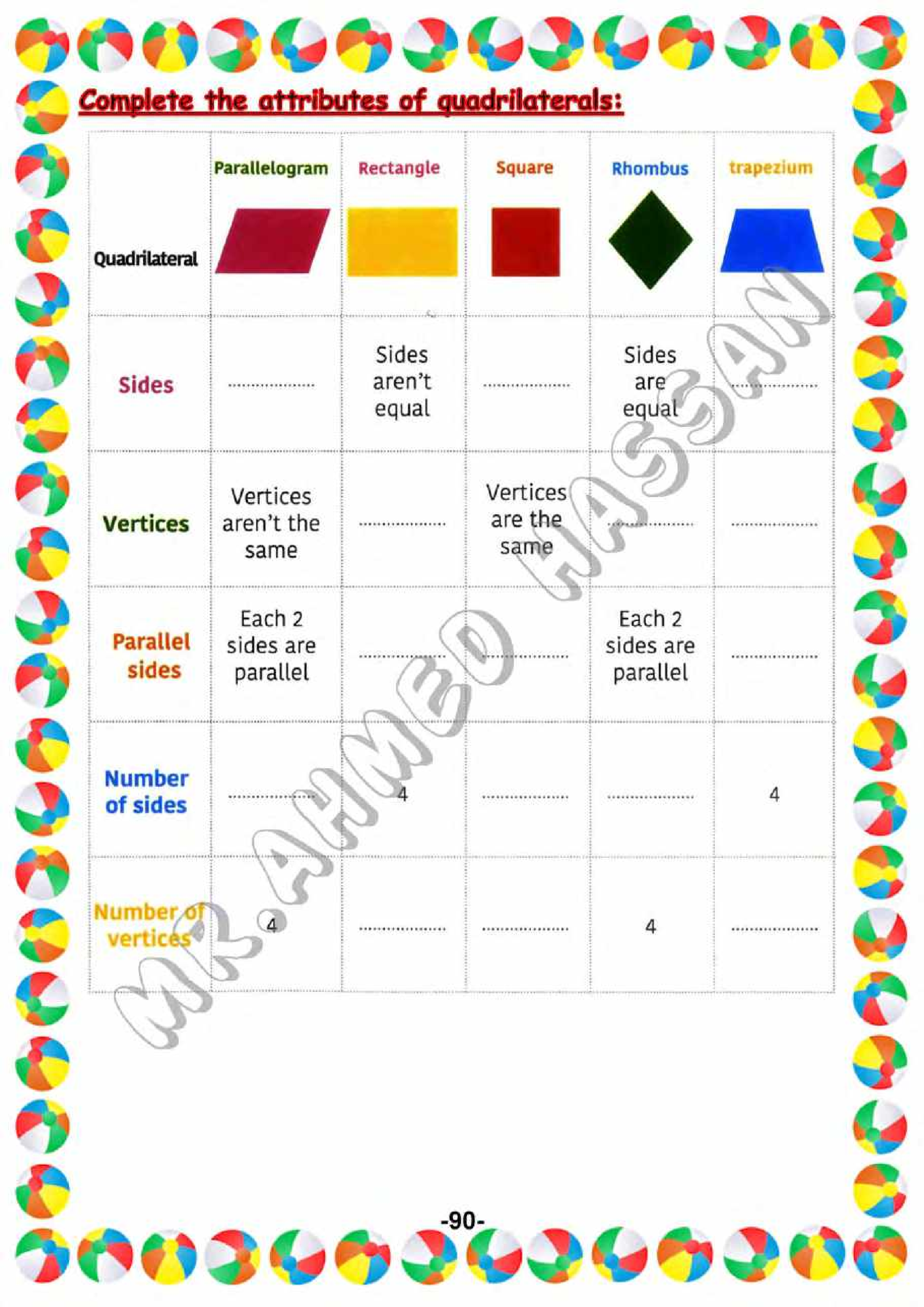


Match:

a) I have a circle		1) Who has the quadrilateral with 4 equal sides?
b) I have an Octagon		2) Who has the quadrilateral in which each 2 opposite sides are parallel?
c) I have a Parallelogram		3) Who has the 2D shape that is not a polygon?
d) I have a Square		4) Who has the 2D shape with 8 sides and 8 vertices?

Lesson 32: Quadrilaterals

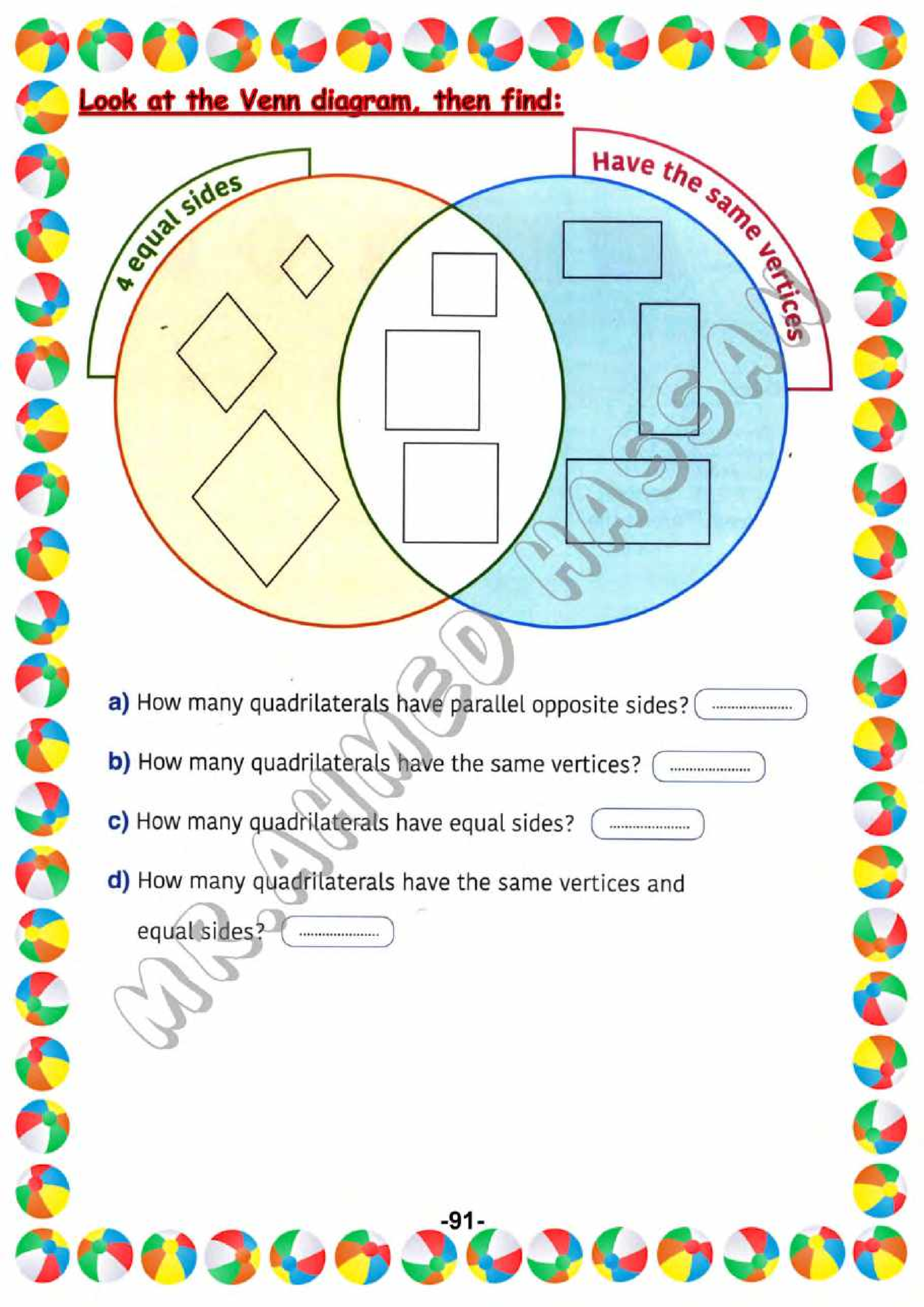




Complete the attributes of quadrilaterals:

	Parallelogram	Rectangle	Square	Rhombus	trapezium
Quadrilateral					
Sides	....	Sides aren't equal	....	Sides are equal	....
Vertices	Vertices aren't the same	....	Vertices are the same	....	....
Parallel sides	Each 2 sides are parallel	....	....	Each 2 sides are parallel	....
Number of sides	....	4	....	....	4
Number of vertices	4	....	....	4	....

Look at the Venn diagram, then find:



a) How many quadrilaterals have parallel opposite sides? (....................)

b) How many quadrilaterals have the same vertices? (....................)

c) How many quadrilaterals have equal sides? (....................)

d) How many quadrilaterals have the same vertices and equal sides? (....................)



Lesson 33: Trapezium



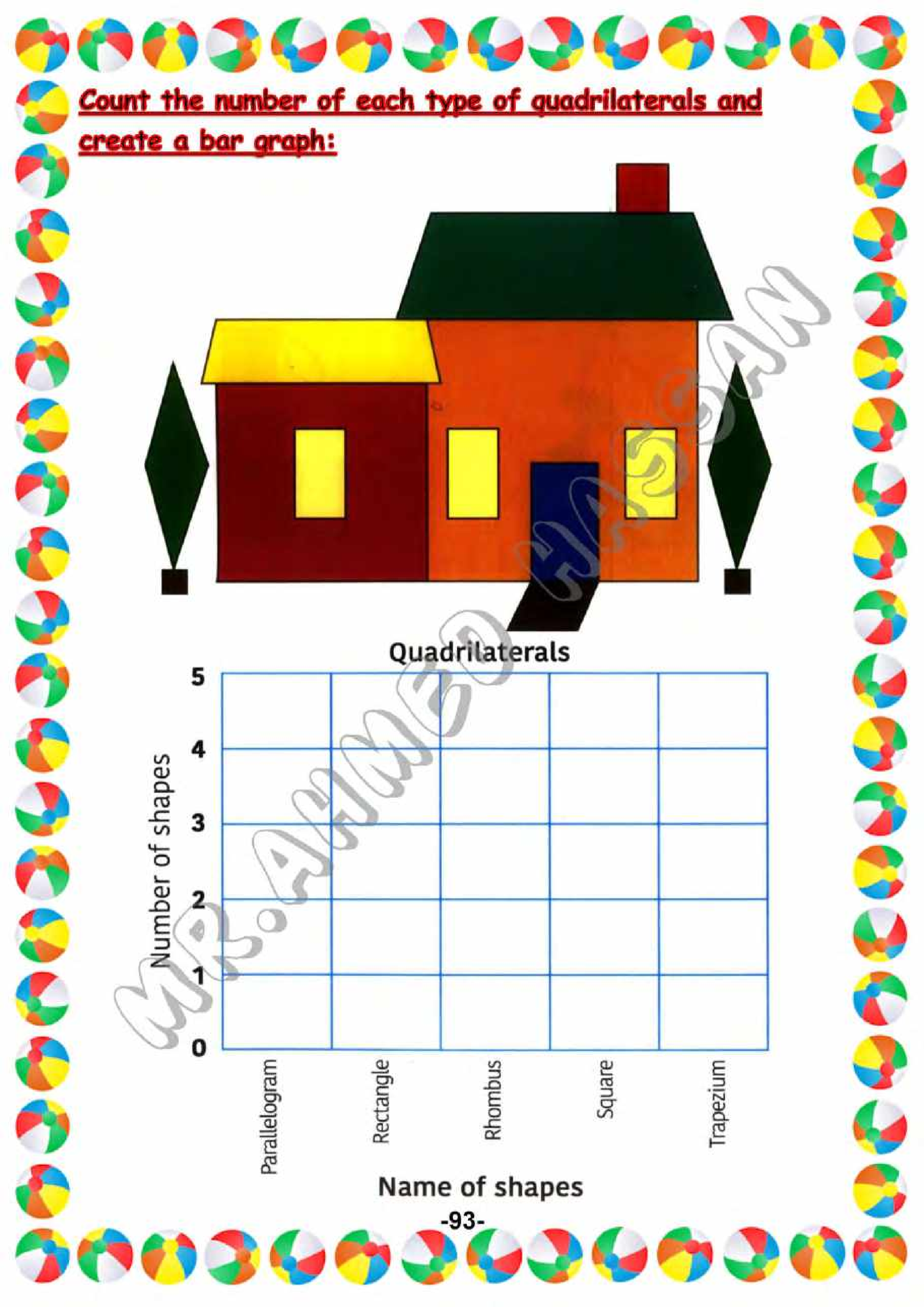
Trapezium

It is a type of quadrilaterals with only one set of parallel sides and the other two sides are not parallel.

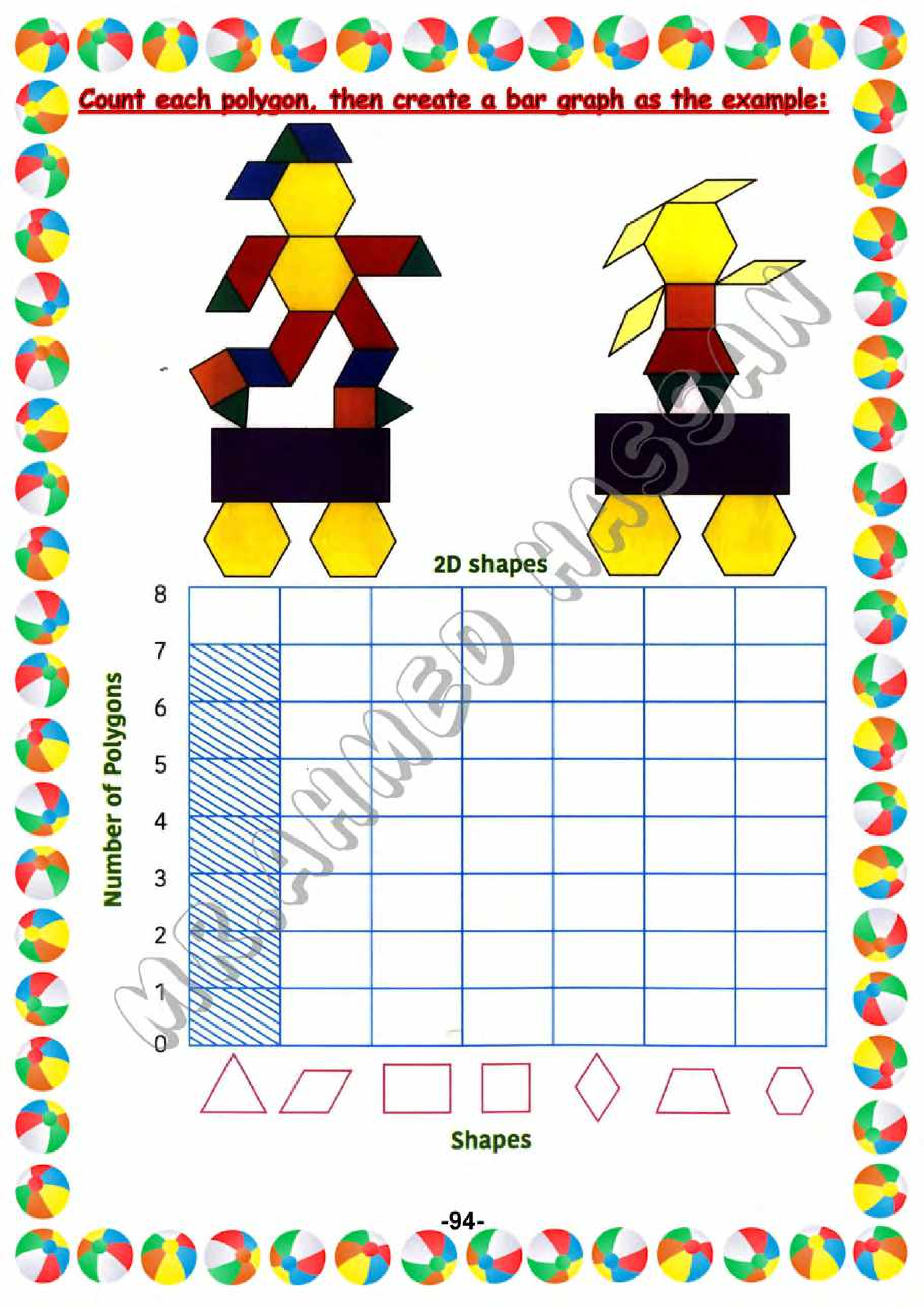
Color the shape according to the given clues:

Clue	Shapes		
a) I have only 2 parallel sides.	Rhombus	Parallelogram	Trapezium
b) I have 4 equal sides.	Trapezium	Square	Kite
c) Each 2 opposite sides are equal and parallel.	Kite	Parallelogram	Trapezium

Count the number of each type of quadrilaterals and create a bar graph:



Count each polygon, then create a bar graph as the example:





Lessons 34-37: The Area

Area

Is the space inside a shape (number of square units)

How can we find the area?

we can use 2 strategies:

First strategy:

Count the total number of squares inside the rectangle.

Area = 18 square units.

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18

Second strategy:

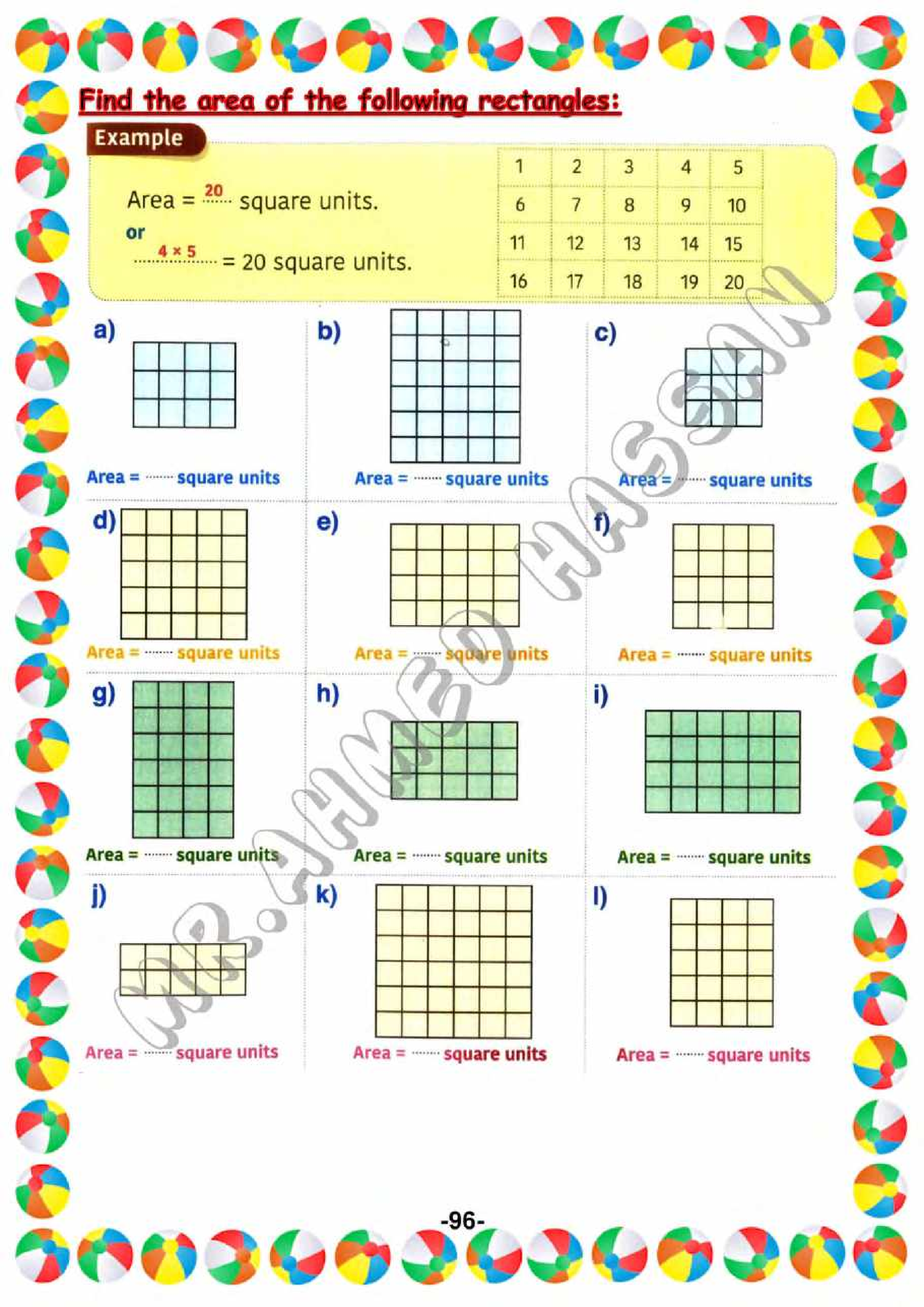
Count the number of rows and the number of columns (Dimensions), then multiply.

number of rows × number of columns

$3 \times 6 = 18$ square units.

Row 3

Column 6



Find the area of the following rectangles:

Example

Area = 20 square units.

or

4 × 5 = 20 square units.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

a) Area = ... square units

b) Area = ... square units

c) Area = ... square units

d) Area = ... square units

e) Area = ... square units

f) Area = ... square units

g) Area = ... square units

h) Area = ... square units

i) Area = ... square units

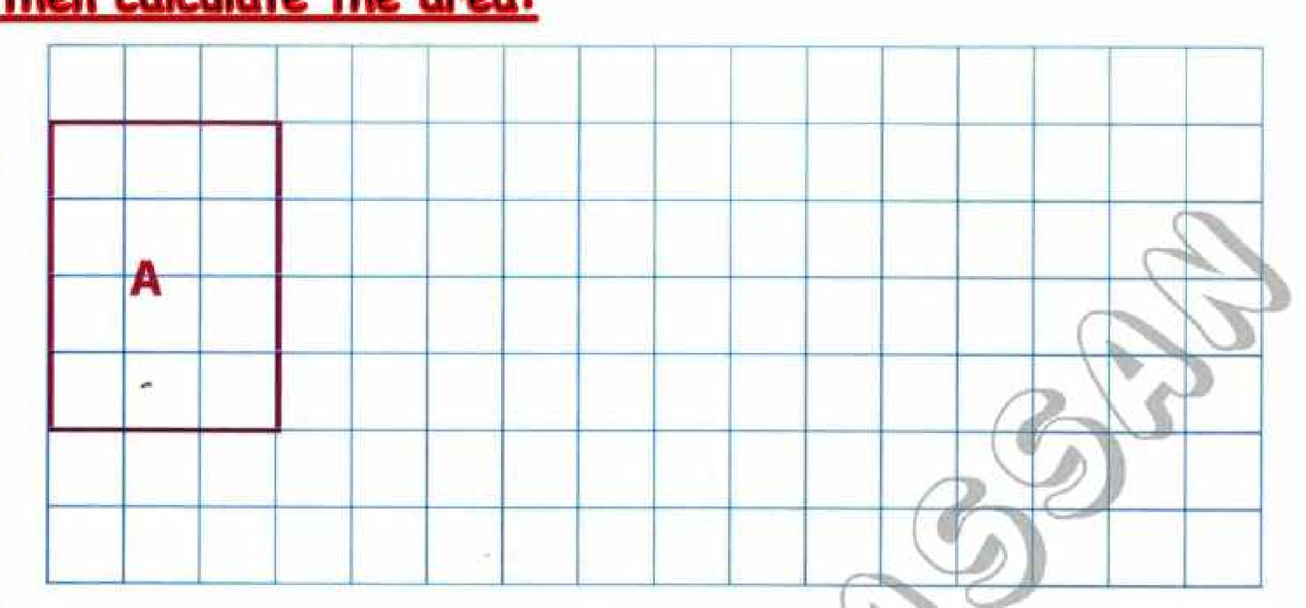
j) Area = ... square units

k) Area = ... square units

l) Area = ... square units



Draw rectangles according to the given rows and columns, then calculate the area:



Example

- Rectangle A

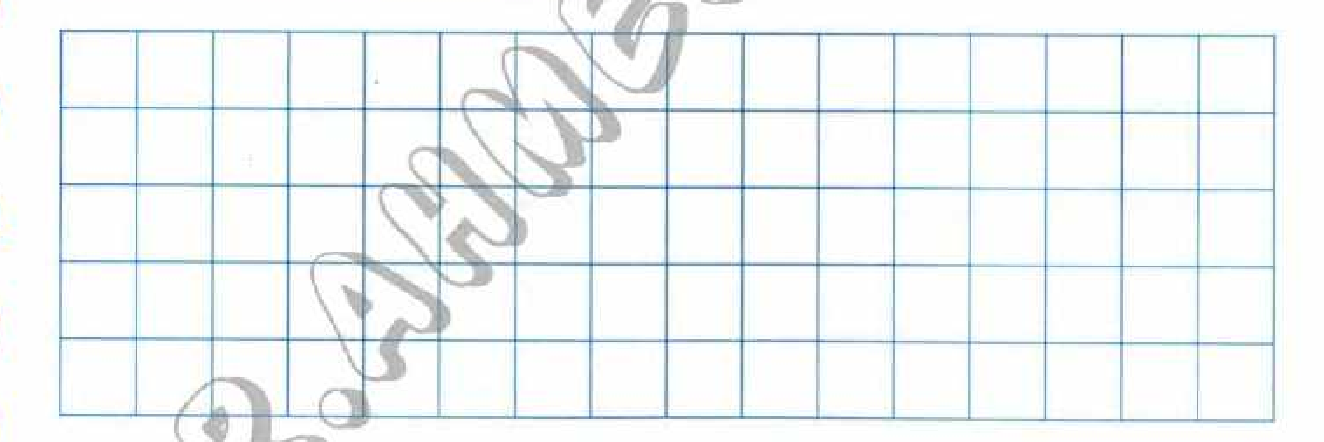
  4 rows and 3 columns

  Area = 4 × 3 = 12 square units.

a) Rectangle B

2 rows and 5 columns

Area= ..... × .....= ..... square units.



b) Rectangle C

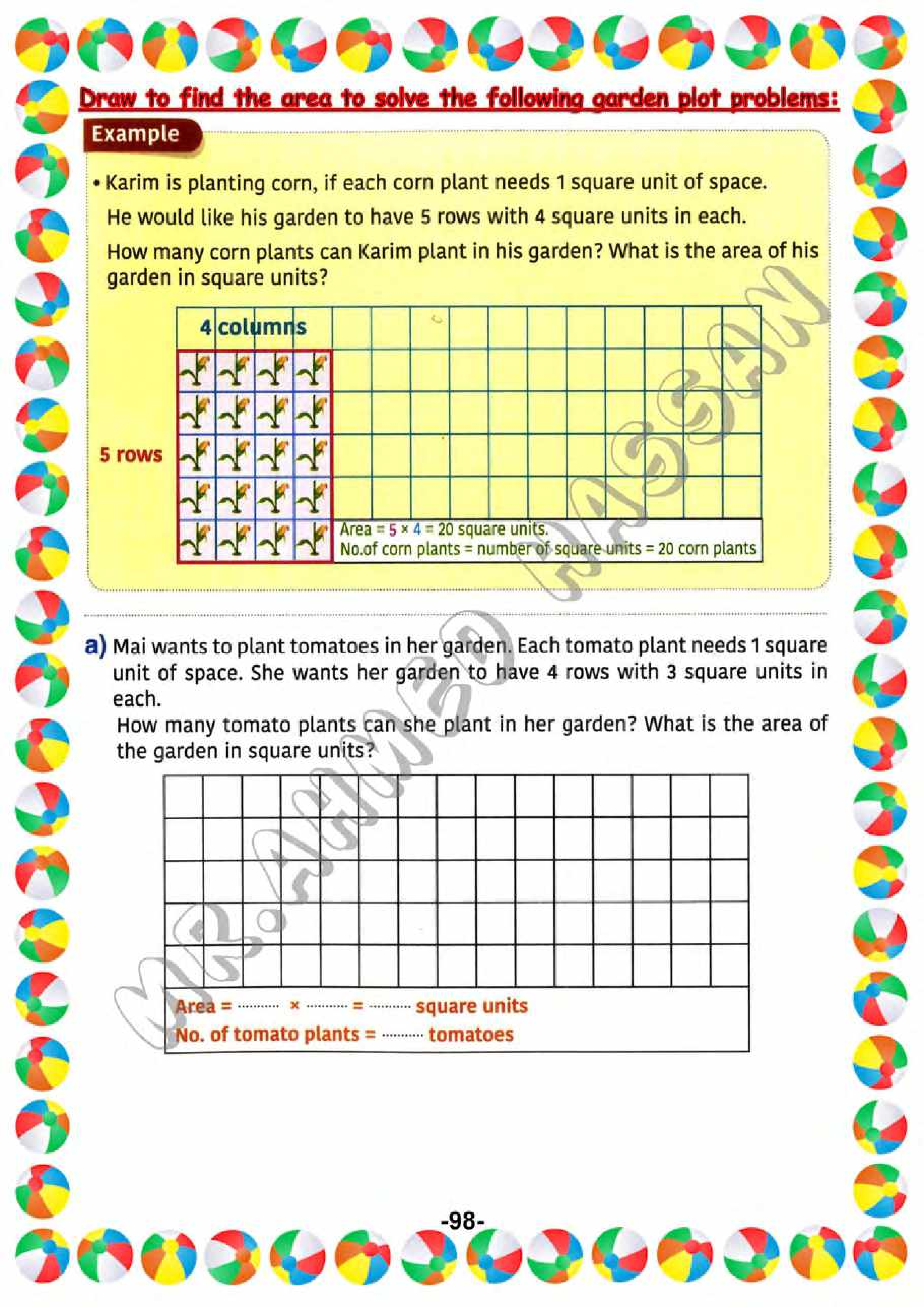
3 rows and 5 columns

Area = ... × .... = ... square units

c) Rectangle D

5 rows and 3 columns

Area = ... × .... = ... square units



Draw to find the area to solve the following garden plot problems:

Example

- Karim is planting corn, if each corn plant needs 1 square unit of space.
  He would like his garden to have 5 rows with 4 square units in each.
  How many corn plants can Karim plant in his garden? What is the area of his garden in square units?

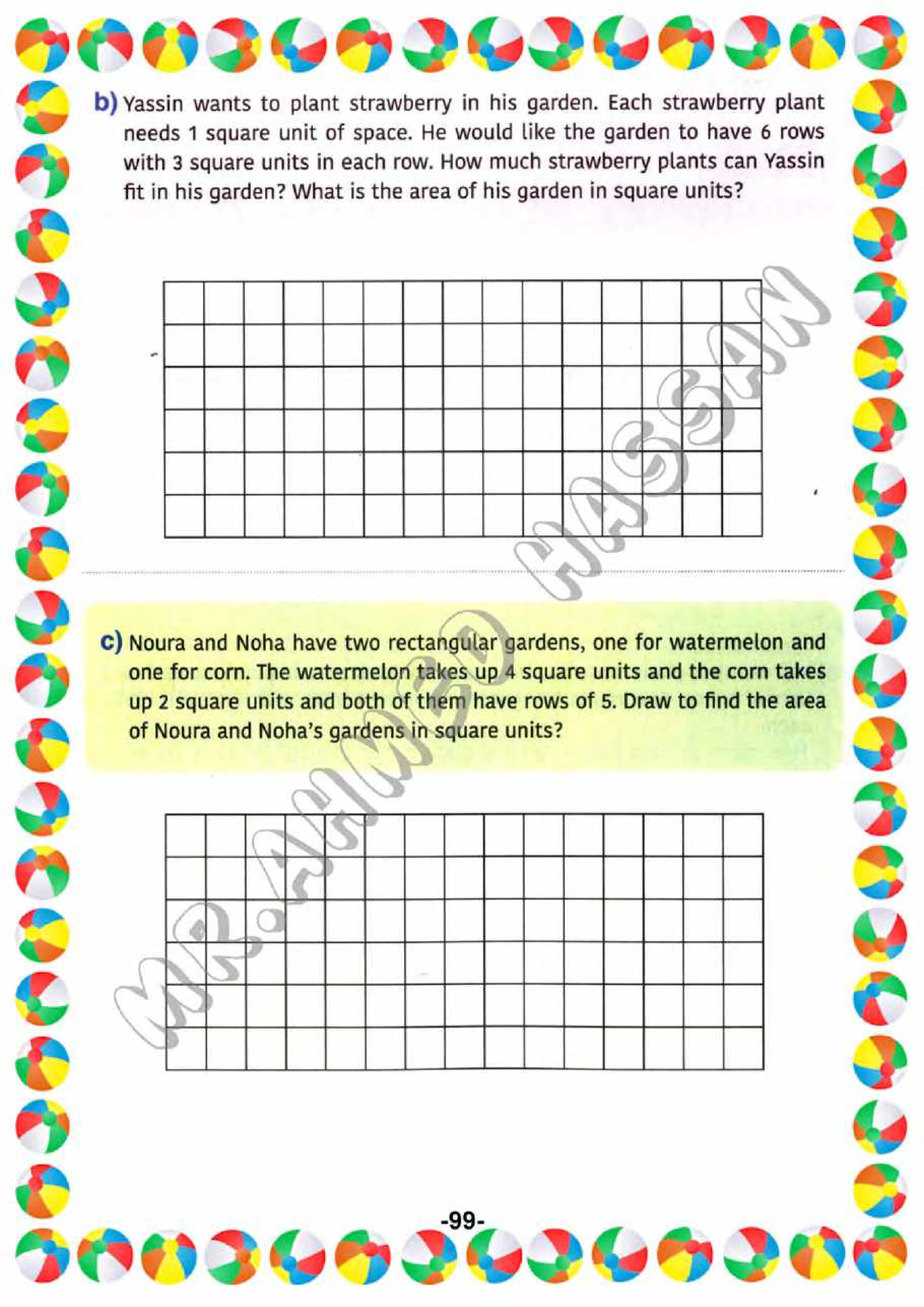
4 columns

5 rows

Area = 5 × 4 = 20 square units.
No.of corn plants = number of square units = 20 corn plants

a) Mai wants to plant tomatoes in her garden. Each tomato plant needs 1 square unit of space. She wants her garden to have 4 rows with 3 square units in each.
How many tomato plants can she plant in her garden? What is the area of the garden in square units?

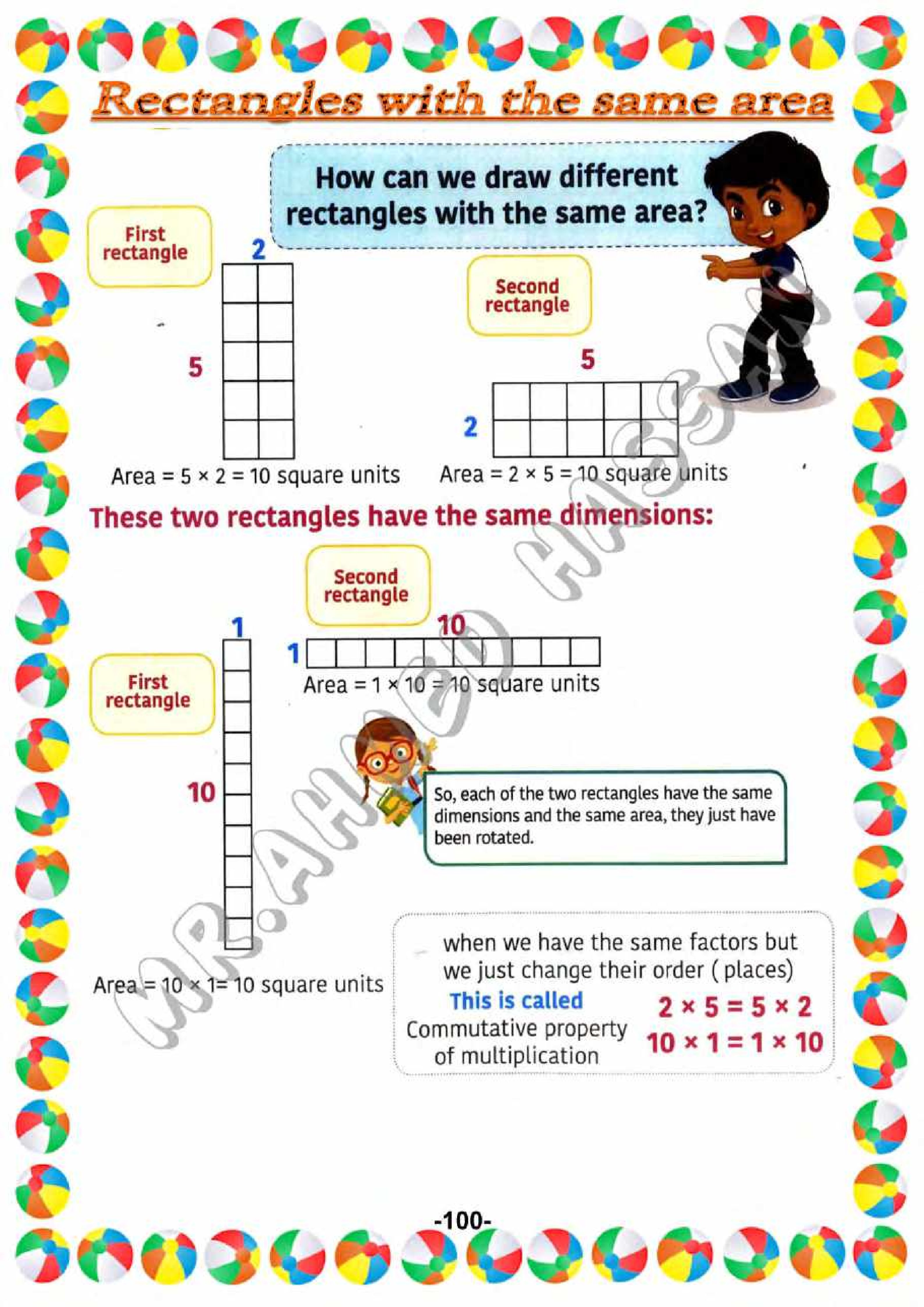
Area = ... × .... = ... square units
No. of tomato plants = ... tomatoes



b) Yassin wants to plant strawberry in his garden. Each strawberry plant needs 1 square unit of space. He would like the garden to have 6 rows with 3 square units in each row. How much strawberry plants can Yassin fit in his garden? What is the area of his garden in square units?

c) Noura and Noha have two rectangular gardens, one for watermelon and one for corn. The watermelon takes up 4 square units and the corn takes up 2 square units and both of them have rows of 5. Draw to find the area of Noura and Noha's gardens in square units?

Rectangles with the same area



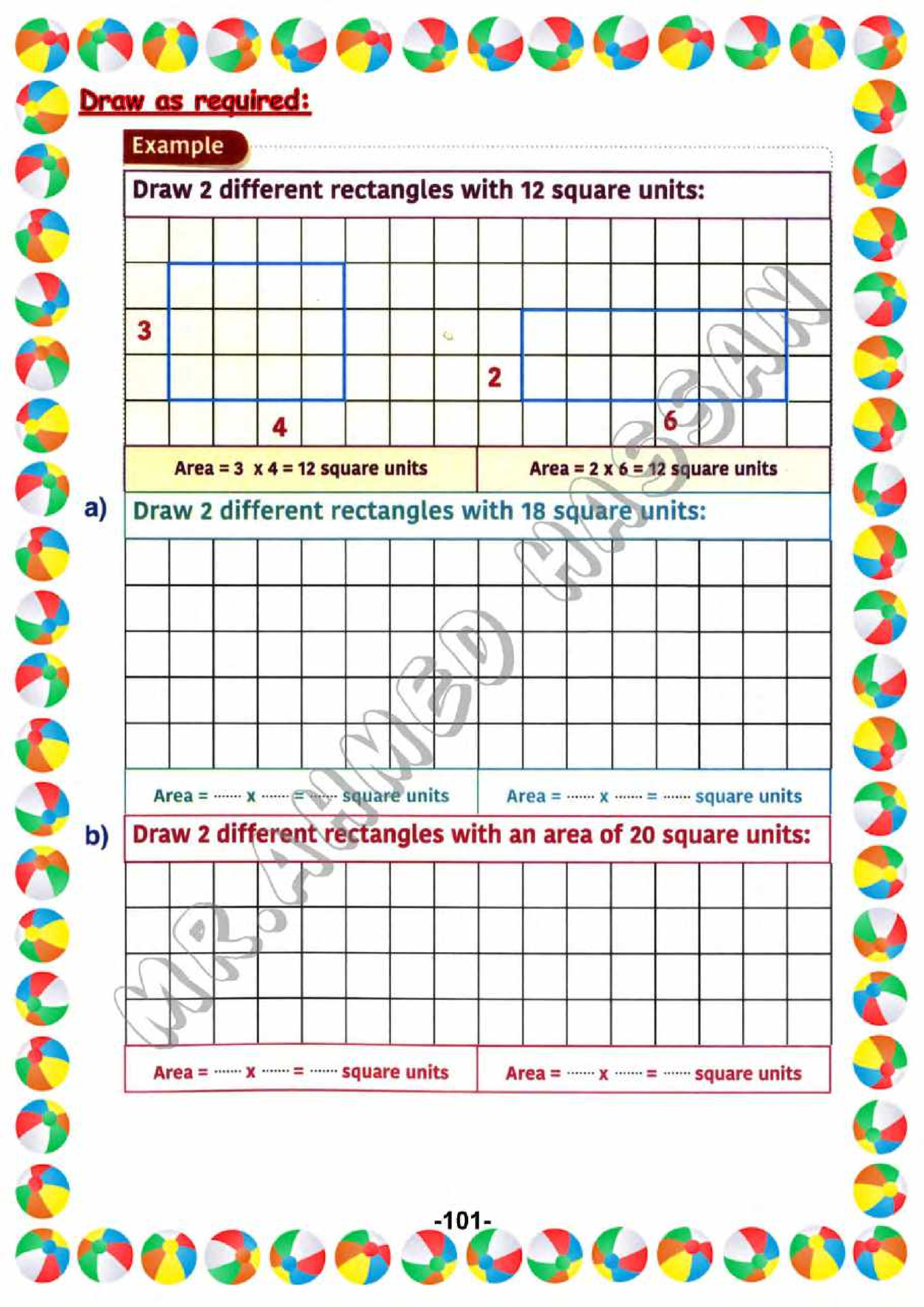
These two rectangles have the same dimensions:

when we have the same factors but we just change their order (places)

This is called
Commutative property of multiplication

$2 \times 5 = 5 \times 2$

$10 \times 1 = 1 \times 10$



Draw as required:

Example

Draw 2 different rectangles with 12 square units:

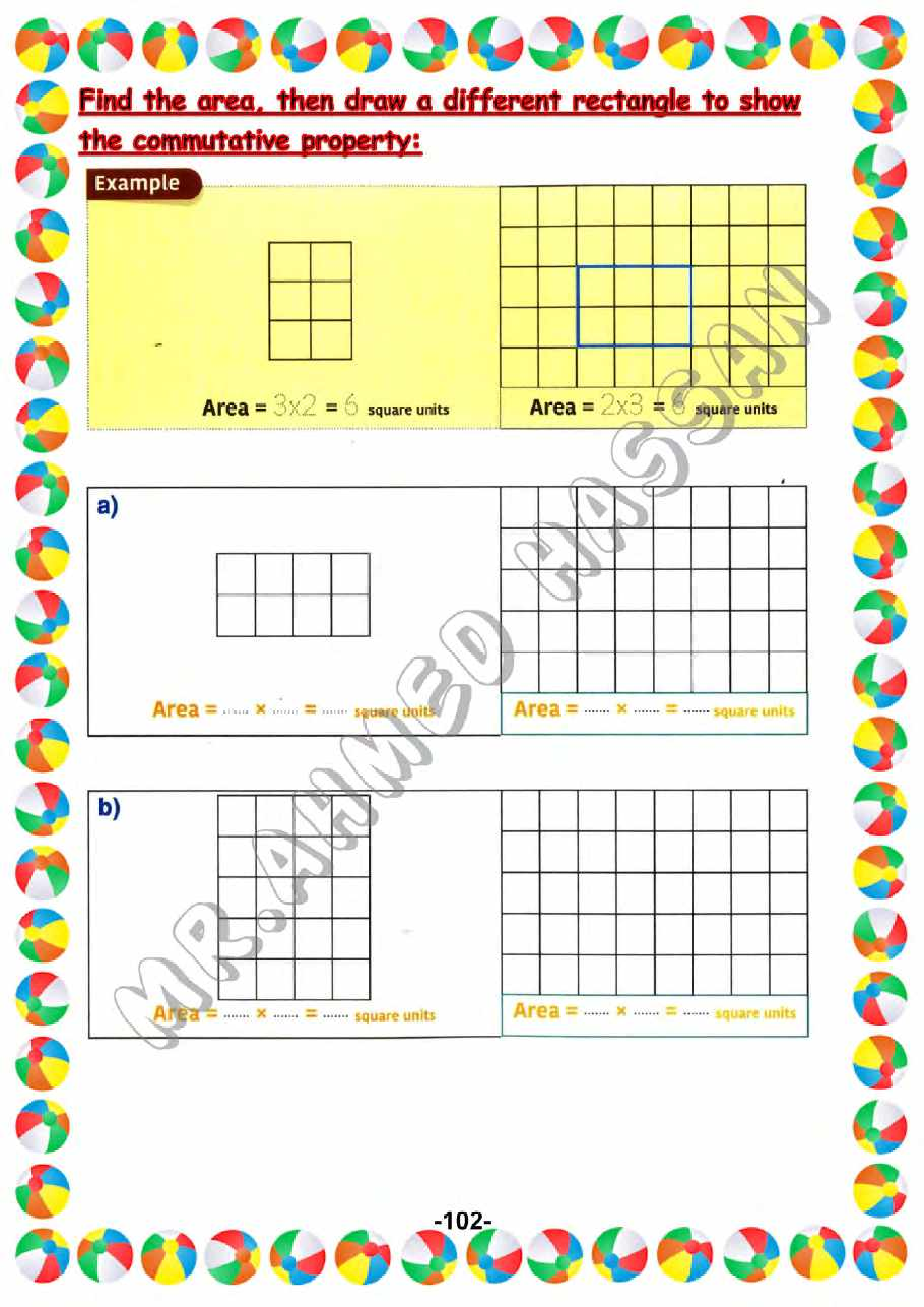
Area = 3 x 4 = 12 square units	Area = 2 x 6 = 12 square units

a) **Draw 2 different rectangles with 18 square units:**

Area = ... x .... = ... square units	Area = ... x .... = ... square units

b) **Draw 2 different rectangles with an area of 20 square units:**

Area = ... x .... = ... square units	Area = ... x .... = ... square units



Find the area, then draw a different rectangle to show the commutative property:

Example

Area = 3x2 = 6 square units

Area = 2x3 = 6 square units

a)

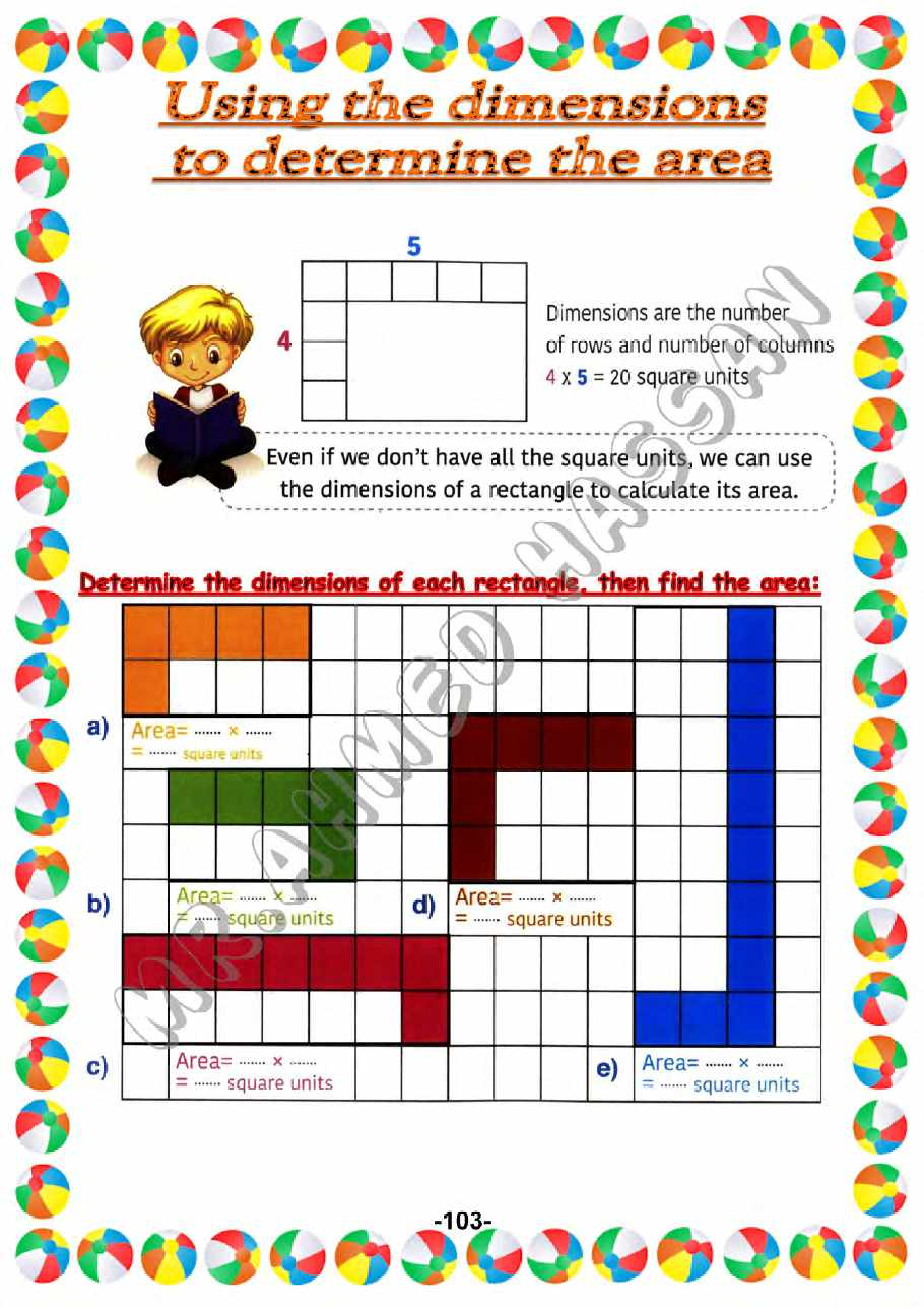
Area = ... × .... = ... square units

Area = ... × .... = ... square units

b)

Area = ... × .... = ... square units

Area = ... × .... = ... square units



Using the dimensions to determine the area

5

4

Dimensions are the number of rows and number of columns

$4 \times 5 = 20$ square units

Even if we don't have all the square units, we can use the dimensions of a rectangle to calculate its area.

Determine the dimensions of each rectangle, then find the area:

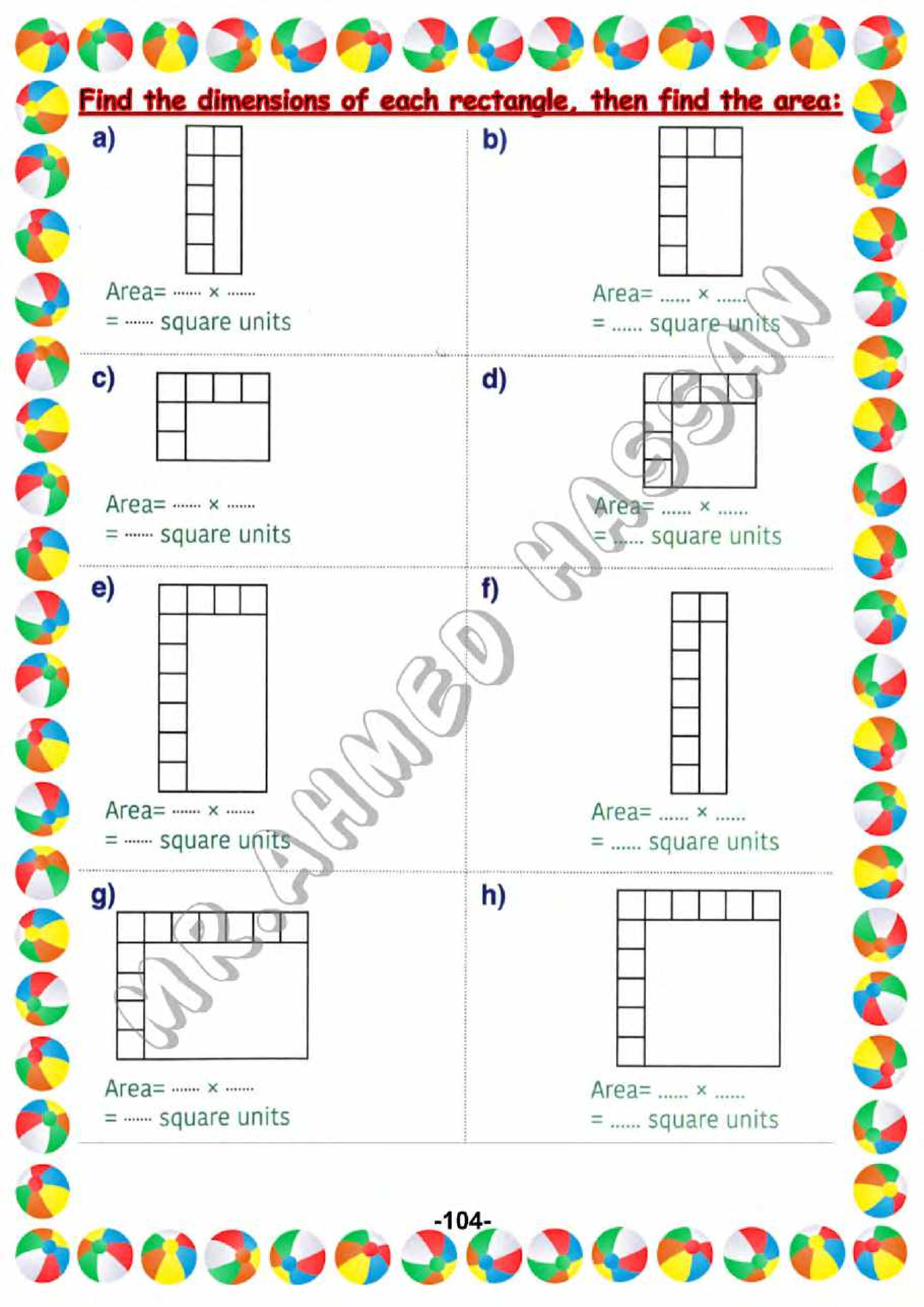
a) Area= .... × ....
= .... square units

b) Area= .... × ....
= .... square units

d) Area= .... × ....
= .... square units

c) Area= .... × ....
= .... square units

e) Area= .... × ....
= .... square units



Find the dimensions of each rectangle, then find the area:

a)

Area= .... × ....
= .... square units

b)

Area= ...... × ......
= ...... square units

c)

Area= .... × ....
= .... square units

d)

Area= ...... × ......
= ...... square units

e)

Area= .... × ....
= .... square units

f)

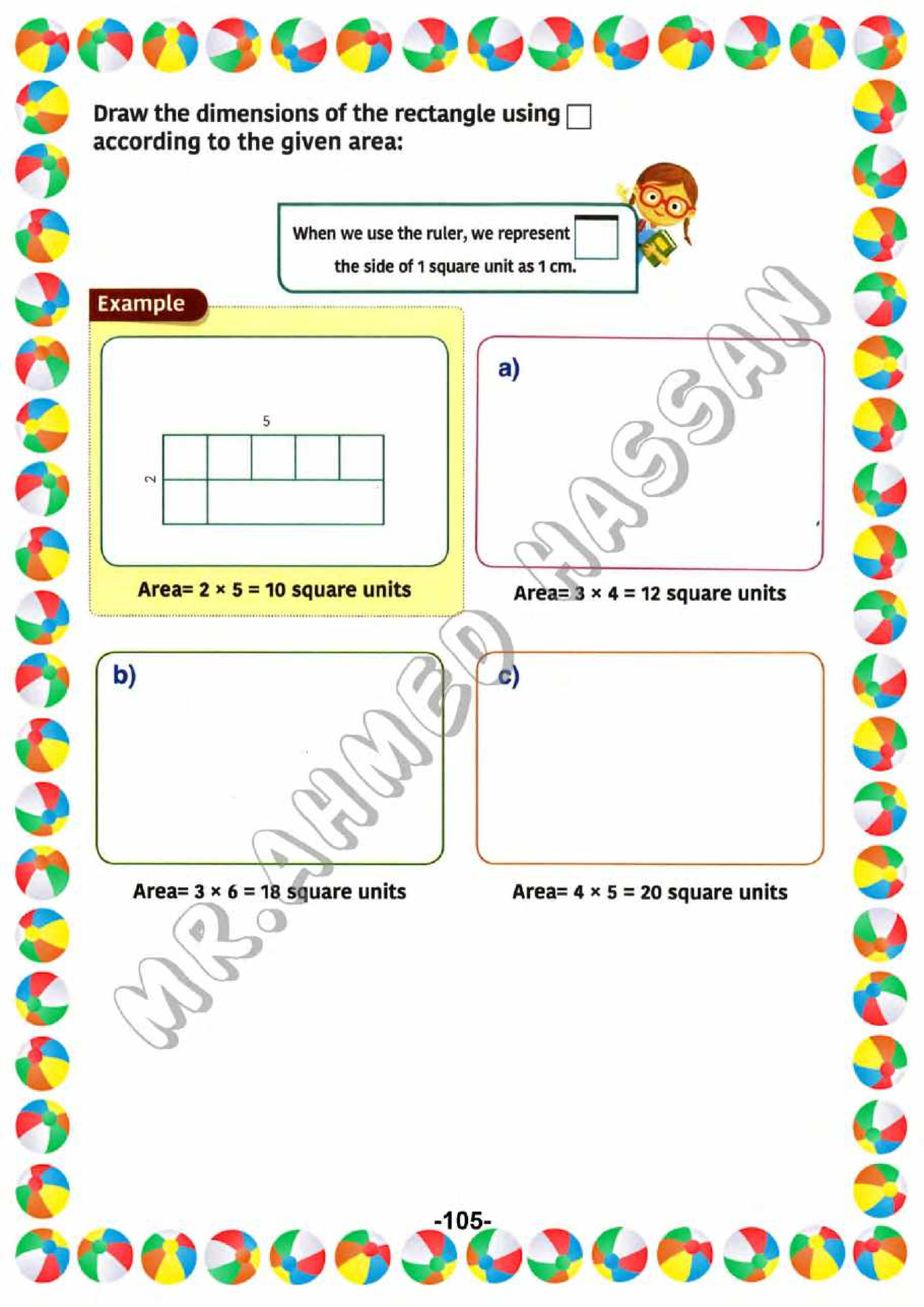
Area= ...... × ......
= ...... square units

g)

Area= .... × ....
= .... square units

h)

Area= ...... × ......
= ...... square units



Draw the dimensions of the rectangle using □ according to the given area:

When we use the ruler, we represent □ the side of 1 square unit as 1 cm.

Example

Area= 2 × 5 = 10 square units

a)

Area= 3 × 4 = 12 square units

b)

Area= 3 × 6 = 18 square units

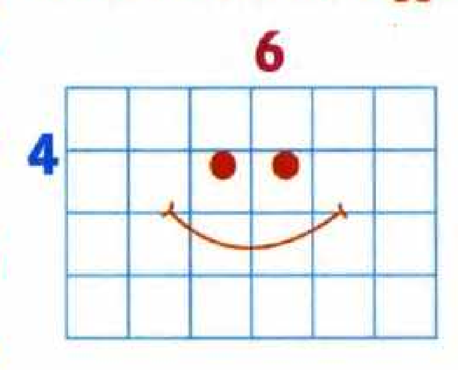
c)

Area= 4 × 5 = 20 square units

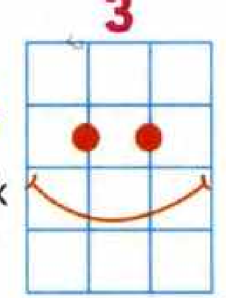
Lessons 38-40: Distributive property of multiplication

Breaking apart strategy

We can break the bigger dimension 6 into 3 + 3



Break into



+

3

4

Big Array

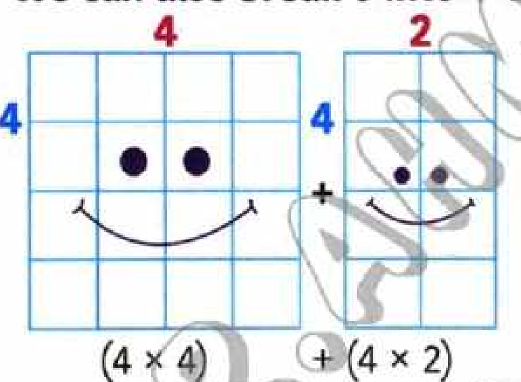
4 × 6 = 24 square units

Small Array Small Array

(4 × 3) + (4 × 3)

(12) + (12) = 24 square units

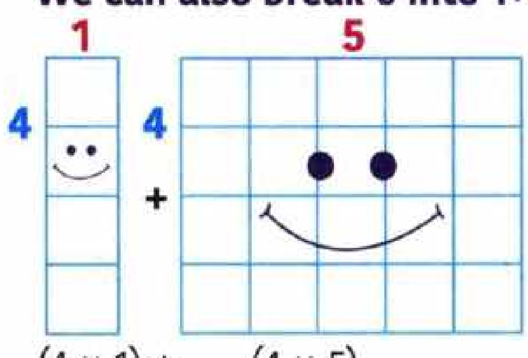
We can also break 6 into 4+2



(4 × 4) + (4 × 2)

(16) + (8) = 24 square units

We can also break 6 into 1+5



(4 × 1) + (4 × 5)

(4) + (20) = 24 square units



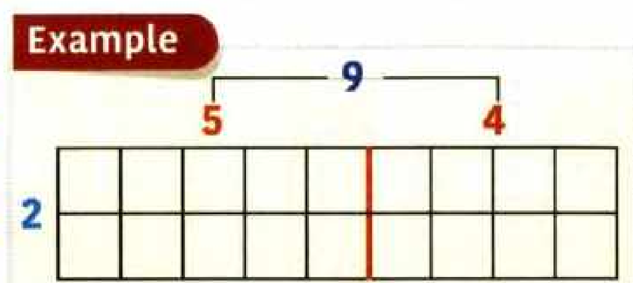
Breaking a multiplication problem into 2 smaller problems, then adding their products together

This is called Distributive property of multiplication.



Use the distributive property to split the given rectangles into 2 smaller rectangles to find the area:

Example





Break 9 the big dimension into (5+4)

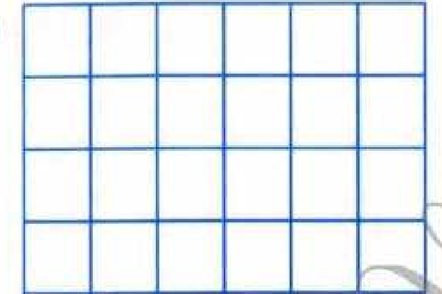
(2 × 5) + (2 × 4)

(10) + (8) = 18 square units

or

(2 × 9) = 18 square units

a)



The big dimension (.....) into (.....+.....)

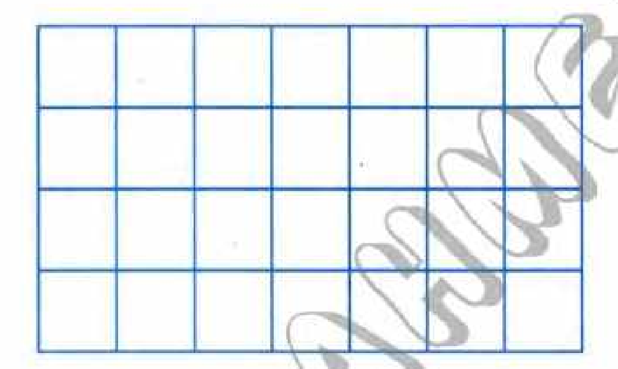
(...... × ......) + (...... × ......)

(......) + (......) = ... square units

or

(4 × 6) = ... square units

b)



The big dimension (.....) into (.....+.....)

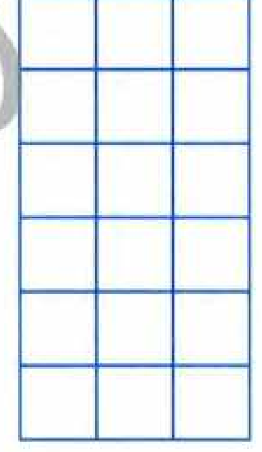
(...... × ......) + (...... × ......)

(......) + (......) = ... square units

or

(4 × 7) = ... square units

c)



The big dimension (.....) into (.....+.....)

(...... × ......) + (...... × ......)

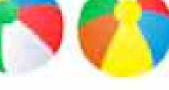
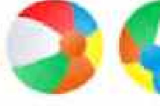
(......) + (......) = ... square units

or

(6 × 3) = ... square units







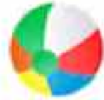








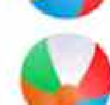












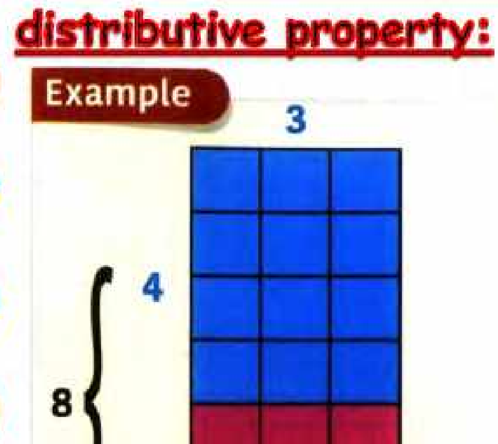






Color to break the arrays, then find the area using distributive property:

Example



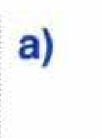
(4 × 3) + (4 × 3)

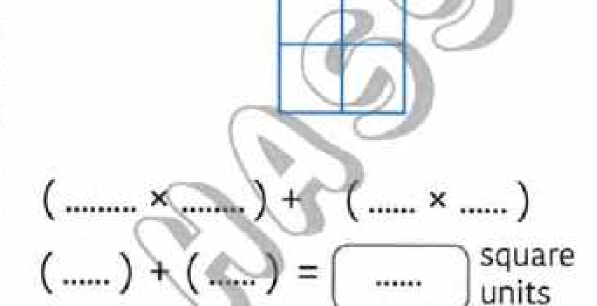
(12) + (12) = 24 square units

or

(8 × 3) = 24 square units

a)





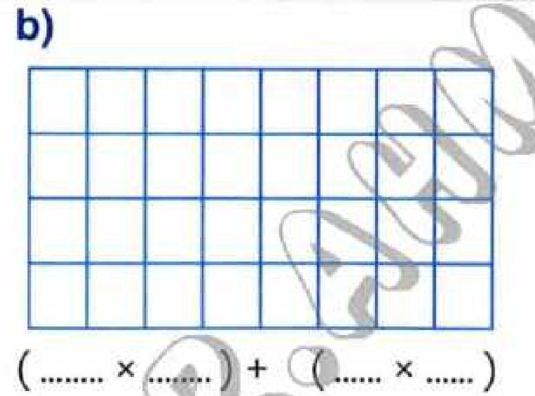
(......... × ....) + (...... × ......)

(......) + (......) = ... square units

or

(6 × 2) = ... square units

b)



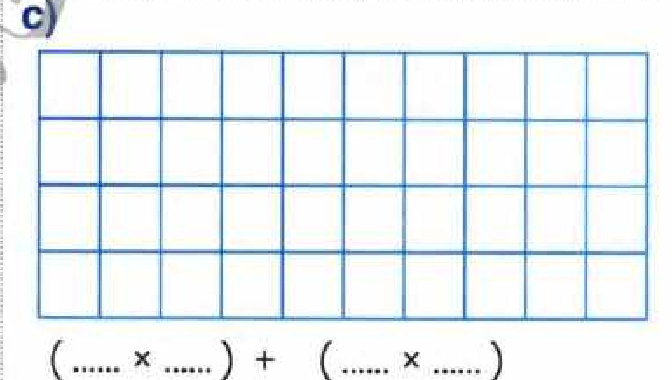
(......... × ....) + (...... × ......)

(......) + (......) = ... square units

or

(4 × 8) = ... square units

c)

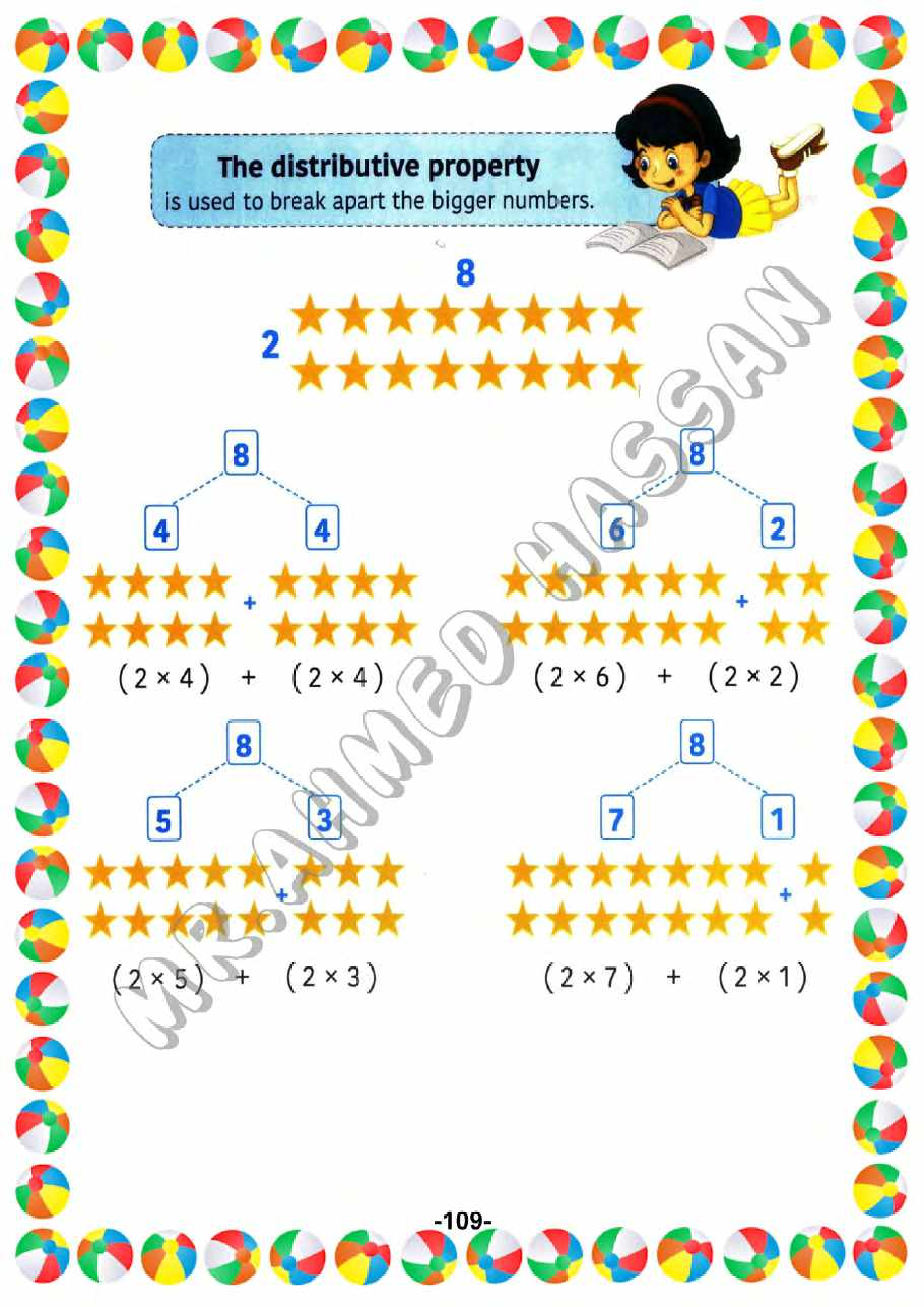


(...... × ......) + (...... × ......)

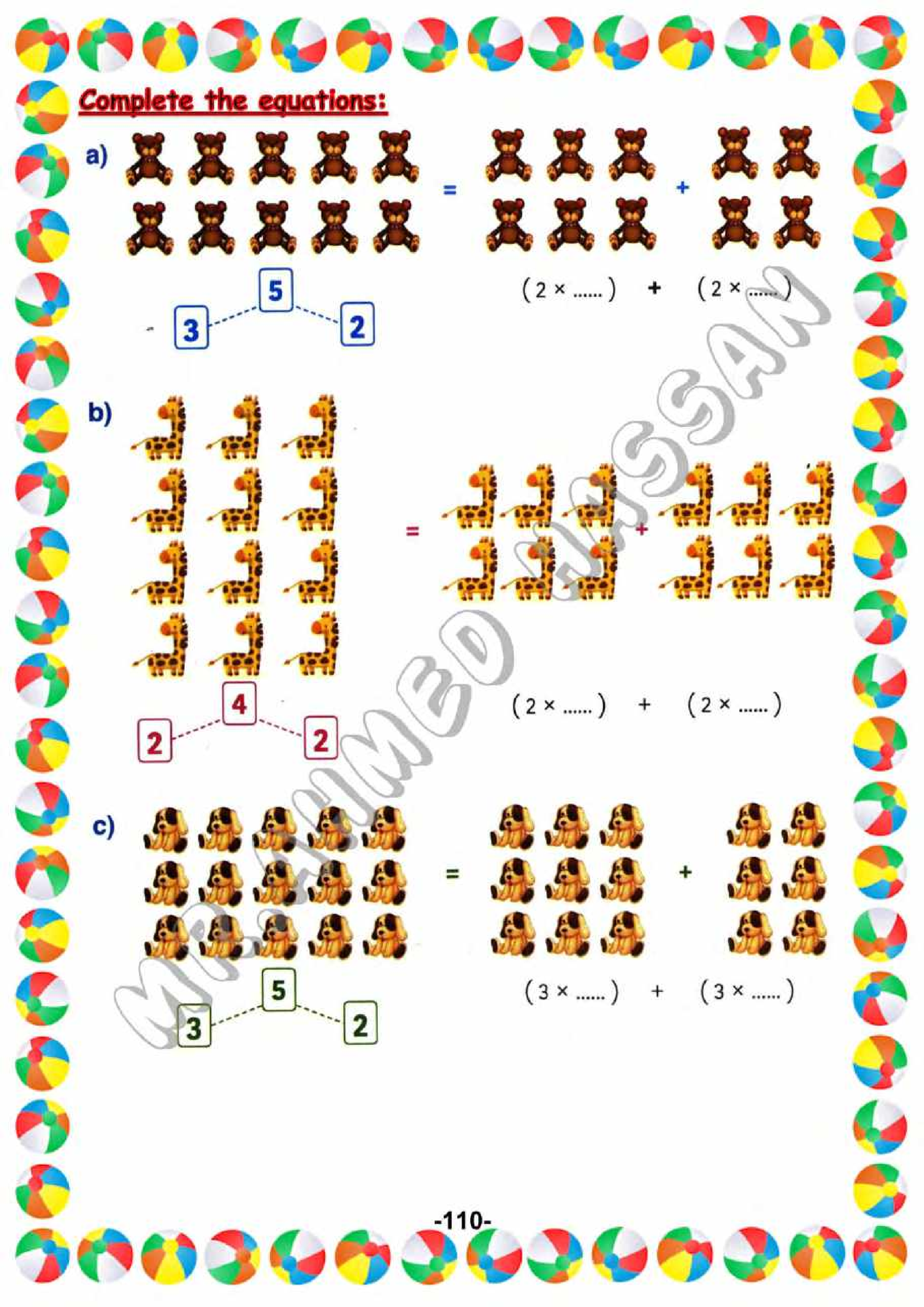
(......) + (......) = ... square units

or

(4 × 10) = ... square units



The distributive property
is used to break apart the bigger numbers.



Complete the equations:

a)

(2 × ......) + (2 × ......)

5

3 2

b)

(2 × ......) + (2 × ......)

4

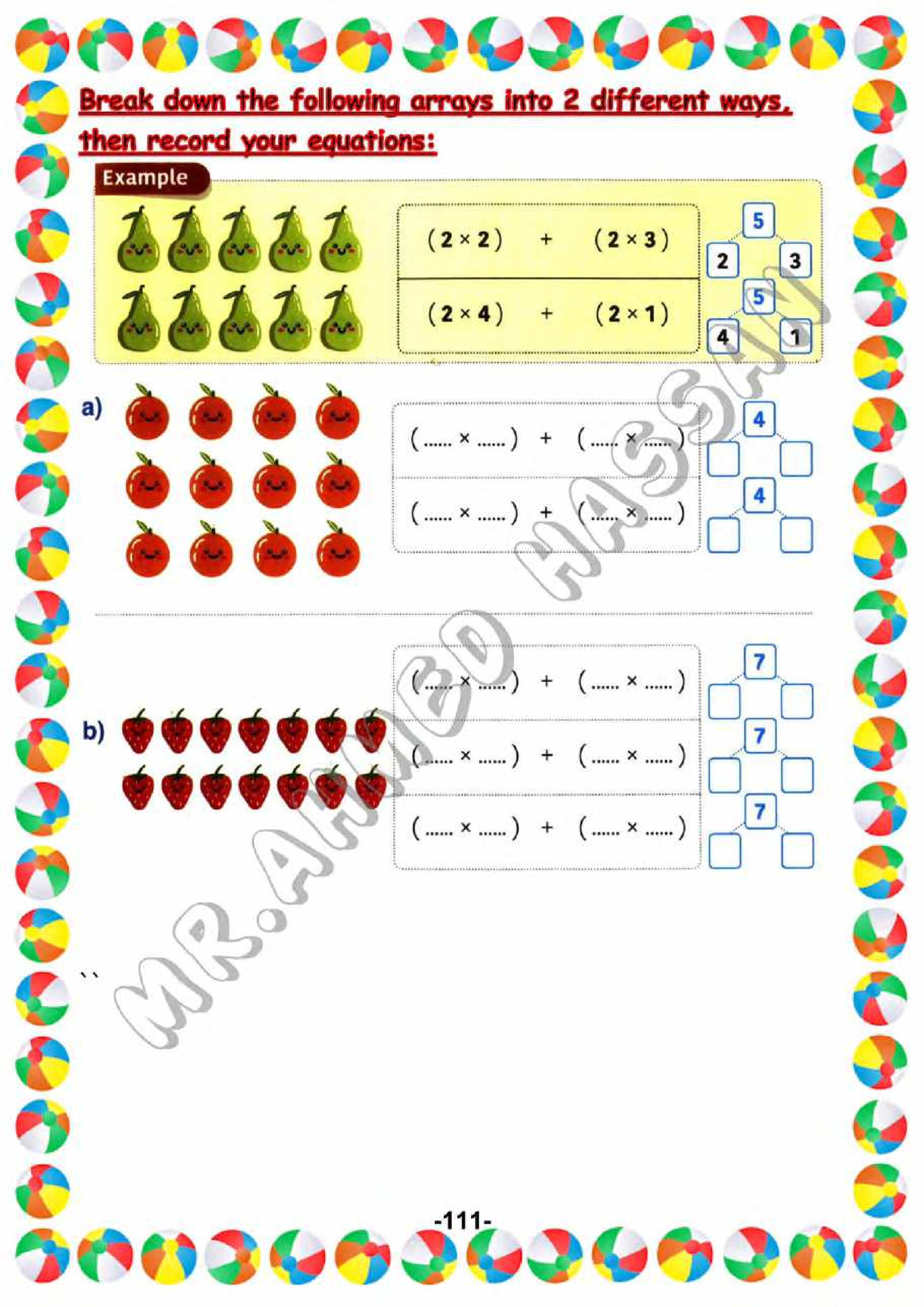
2 2

c)

(3 × ......) + (3 × ......)

5

3 2



Break down the following arrays into 2 different ways, then record your equations:

Example

(2 × 2) + (2 × 3)	5: 2, 3
(2 × 4) + (2 × 1)	5: 4, 1

a)

(...... × ......) + (...... × ......)	4: ☐, ☐
(...... × ......) + (...... × ......)	4: ☐, ☐

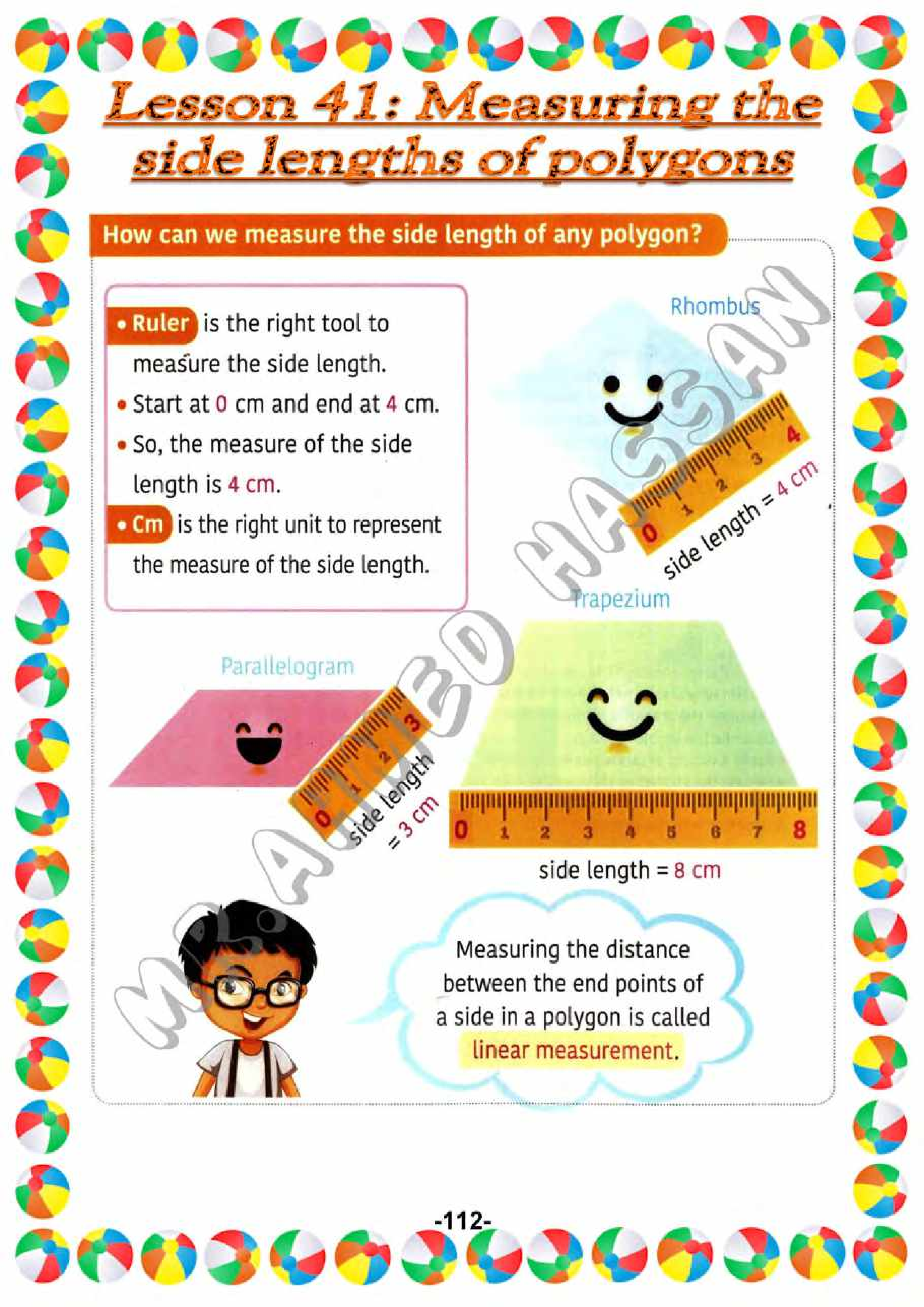
b)

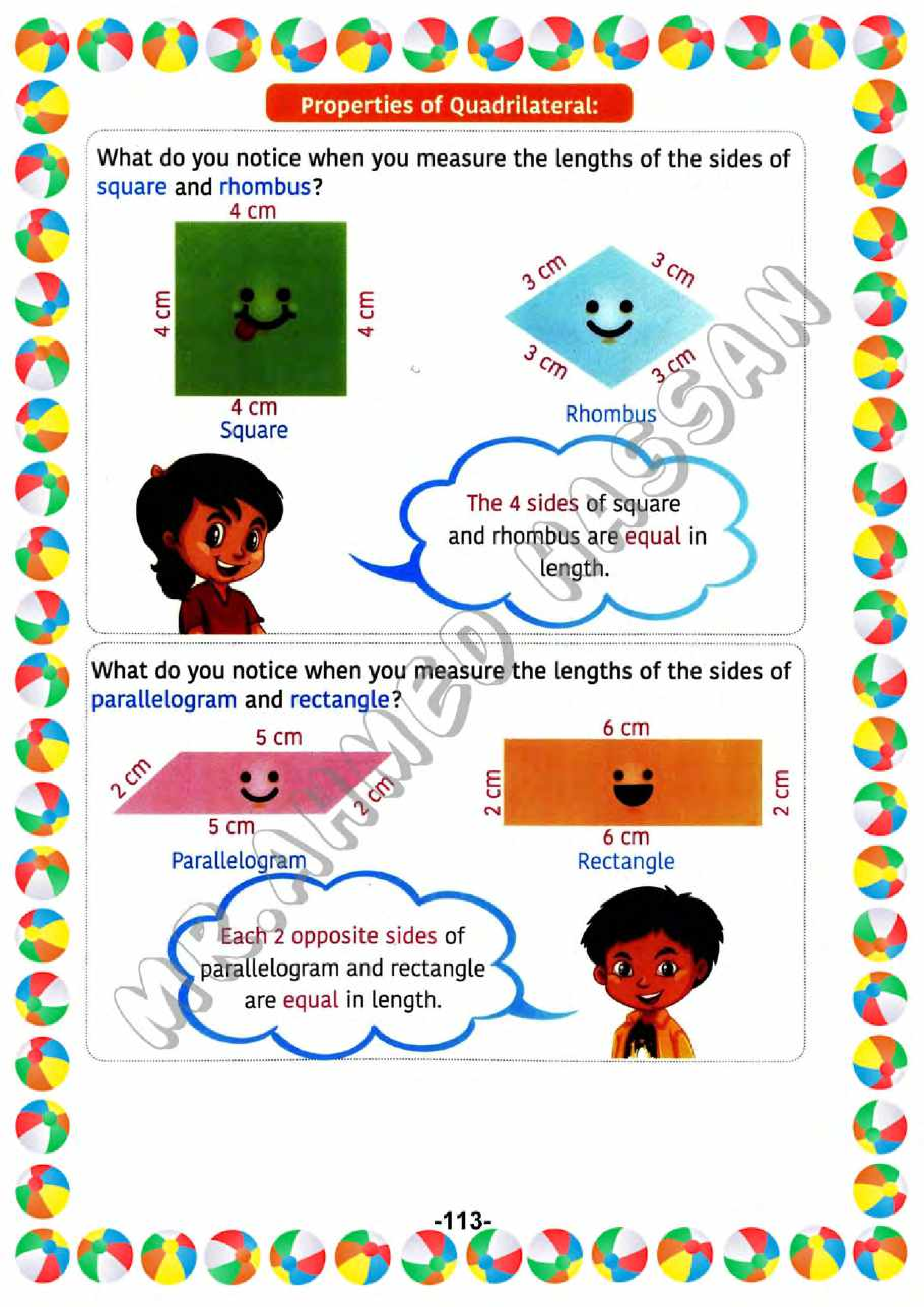
(...... × ......) + (...... × ......)	7: ☐, ☐
(...... × ......) + (...... × ......)	7: ☐, ☐
(...... × ......) + (...... × ......)	7: ☐, ☐

Lesson 41: Measuring the side lengths of polygons

How can we measure the side length of any polygon?

- **Ruler** is the right tool to measure the side length.
- Start at 0 cm and end at 4 cm.
- So, the measure of the side length is 4 cm.
- **Cm** is the right unit to represent the measure of the side length.

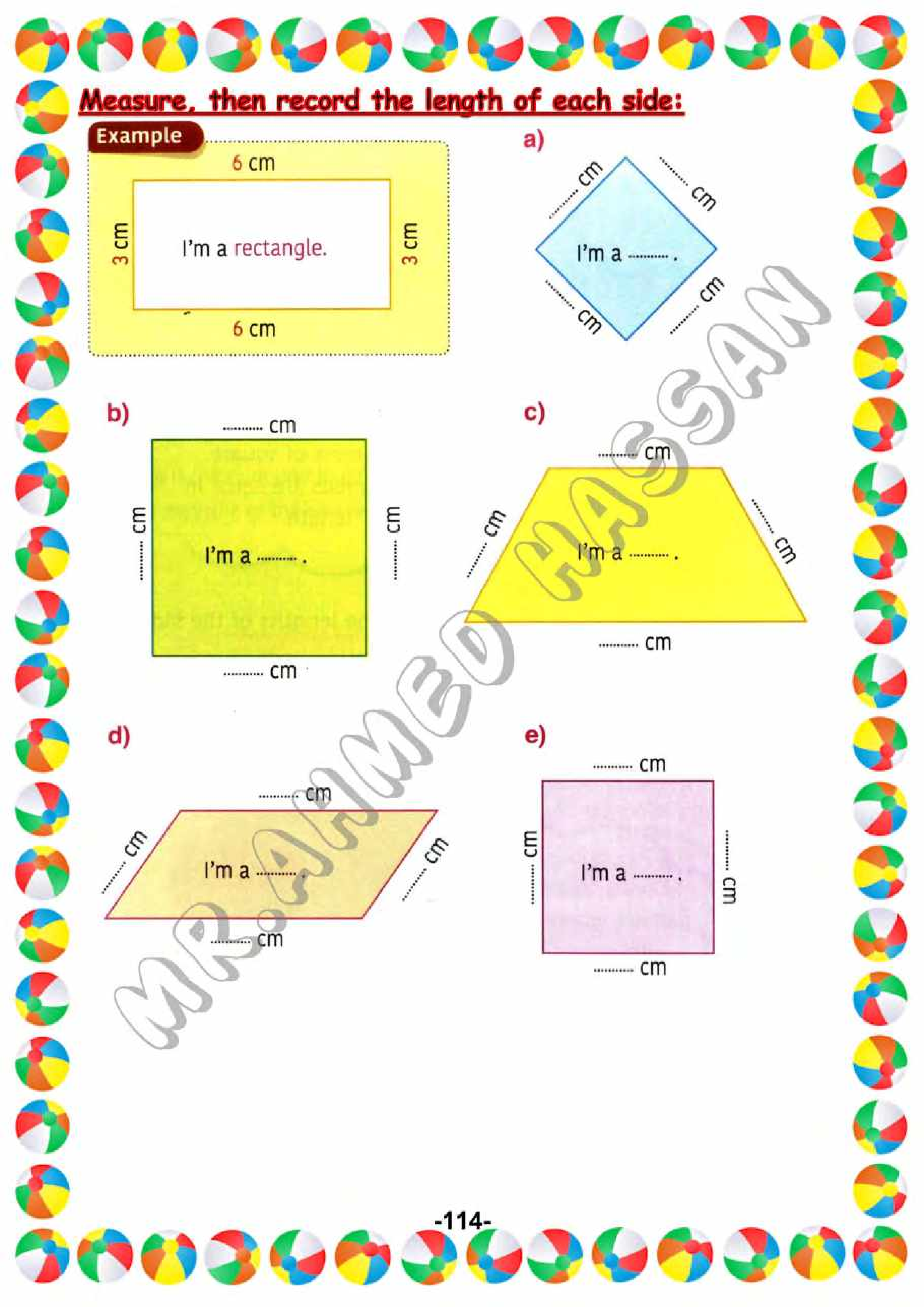




Properties of Quadrilateral:

What do you notice when you measure the lengths of the sides of square and rhombus?

What do you notice when you measure the lengths of the sides of parallelogram and rectangle?



Measure, then record the length of each side:

Example

6 cm

3 cm | I'm a rectangle. | 3 cm

6 cm

a)

.... cm .... cm

I'm a ....

.... cm .... cm

b)

.... cm

.... cm | I'm a .... | .... cm

.... cm

c)

.... cm

.... cm | I'm a .... | .... cm

.... cm

d)

.... cm

.... cm | I'm a .... | .... cm

.... cm

e)

.... cm

.... cm | I'm a .... | .... cm

.... cm



Measure the length of the colored side, then choose:

a) 5 cm , 6 cm or 4 cm

b) 3 cm , 5 cm or 6 cm

c) 2 cm , 3 cm or 5 cm

d) 3 cm , 6 cm or 5 cm

e) 3 cm , 1 cm or 2 cm

f) 5 cm , 4 cm or 8 cm

Lessons 42-43:
The perimeter of polygons

How can we calculate the perimeter?

First:

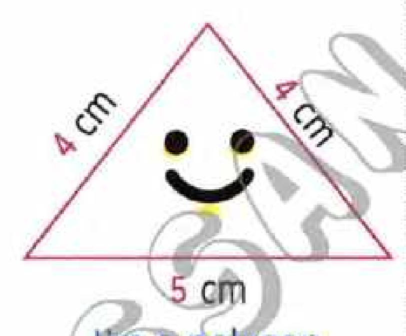
Measure the lengths of all sides of the triangle.

Second:

Add the lengths of the 3 sides

4 cm + 4 cm + 5 cm = 13 cm

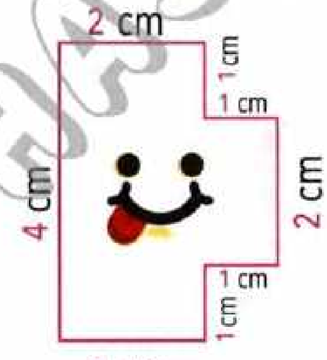
The total length equals 13 cm which is the perimeter.



I'm a polygon.

The perimeter:

is one linear measurement of the distance (the sum of all sides) around the shape.

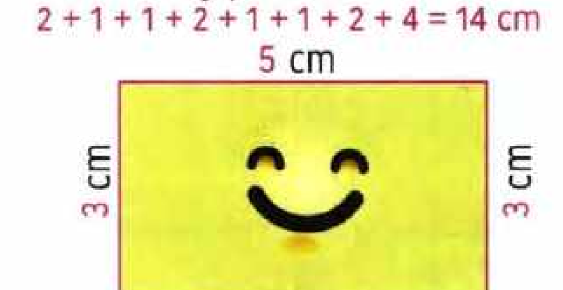


I'm a polygon.

My perimeter = 2 + 1 + 1 + 2 + 1 + 1 + 2 + 4 = 14 cm

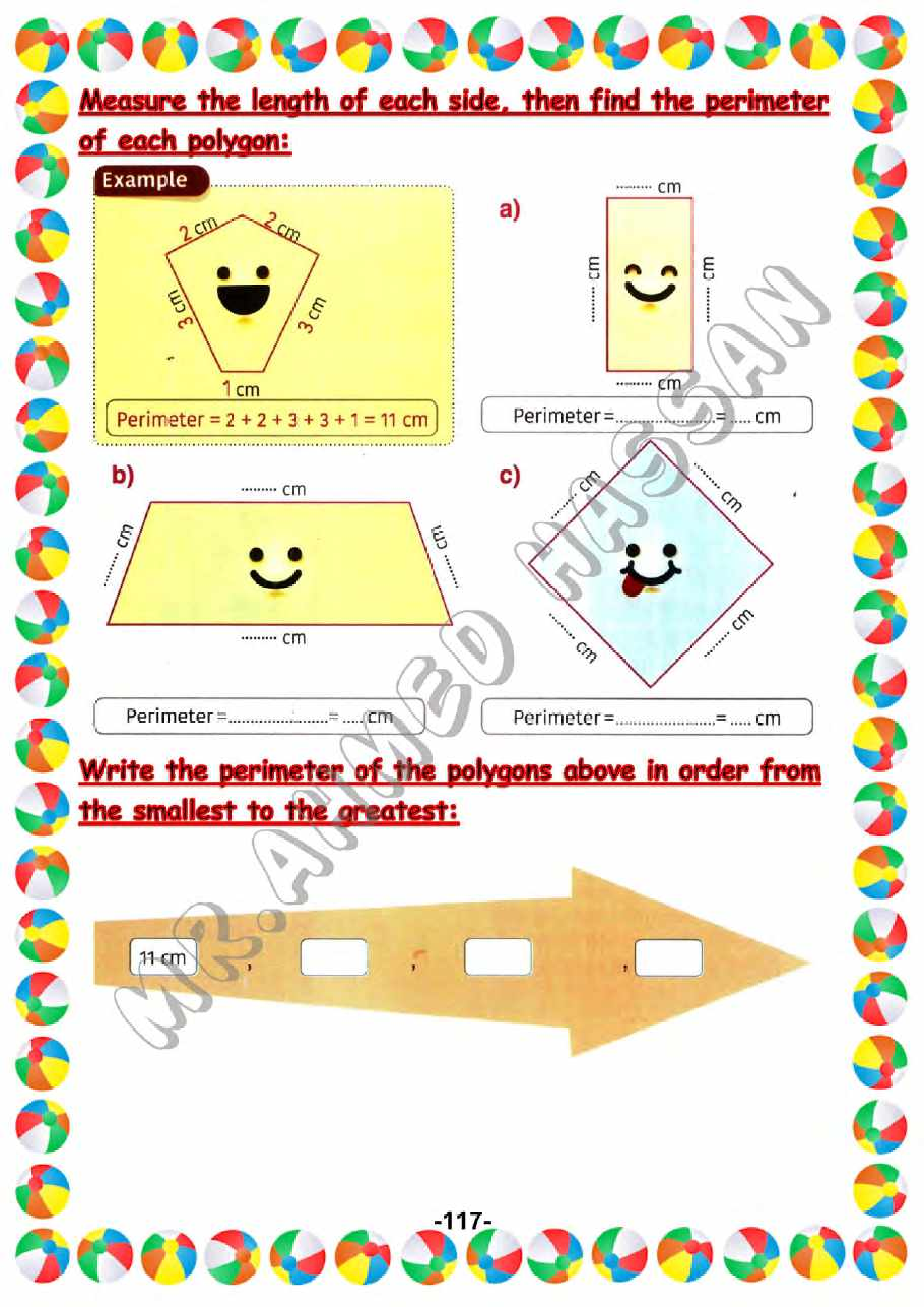
NOT POLYGONS

These shapes are not polygons because they have curved lines and their sides can't be measured with a ruler.



I'm a polygon.

My perimeter = 5 + 3 + 5 + 3 = 16 cm



Measure the length of each side, then find the perimeter of each polygon:

Example

Perimeter = 2 + 2 + 3 + 3 + 1 = 11 cm

a)

Perimeter = ... = ... cm

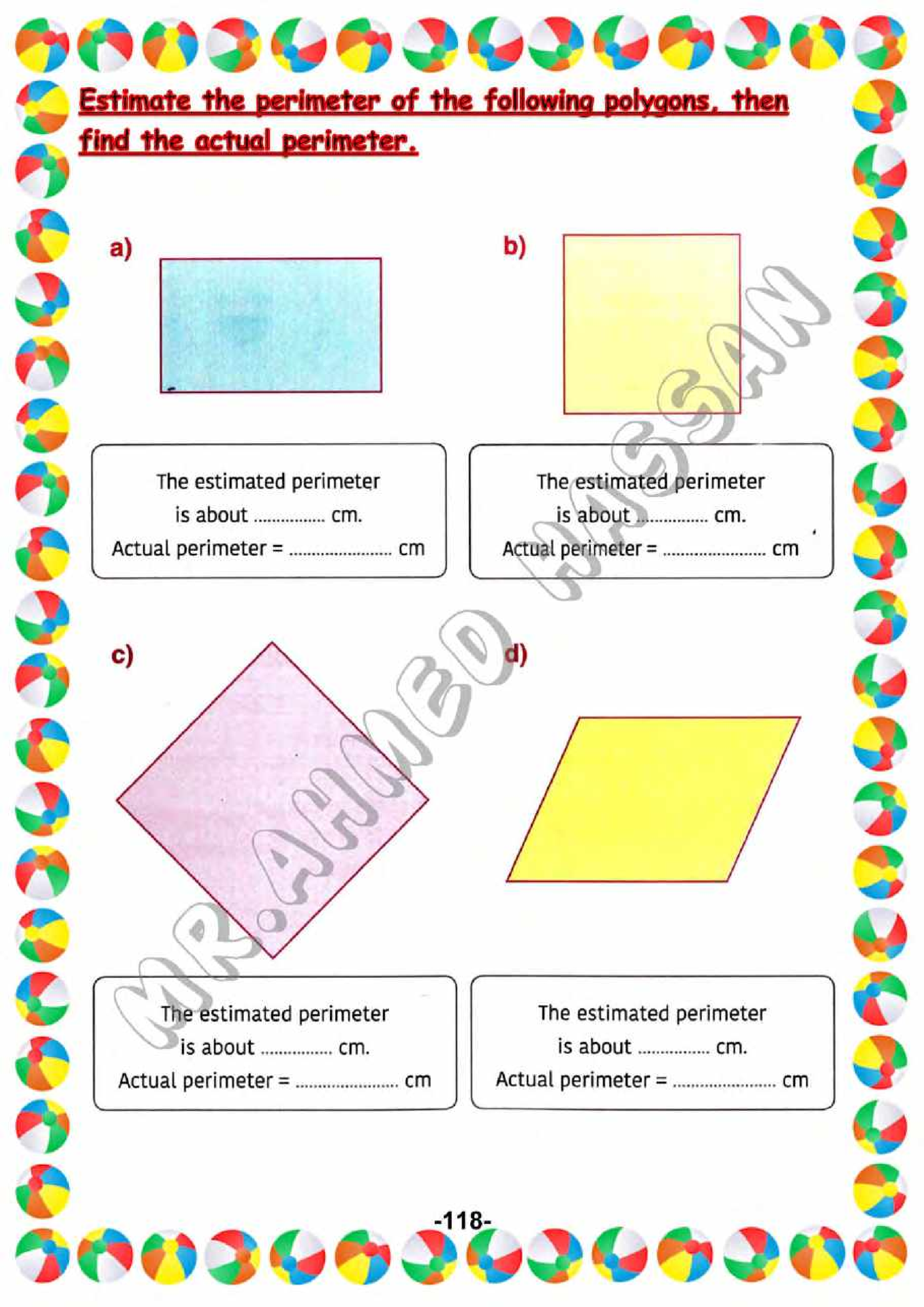
b)

Perimeter = ... = ... cm

c)

Perimeter = ... = ... cm

Write the perimeter of the polygons above in order from the smallest to the greatest:



Estimate the perimeter of the following polygons, then find the actual perimeter.

a)

The estimated perimeter is about .... cm.
Actual perimeter = ... cm

b)

The estimated perimeter is about .... cm.
Actual perimeter = ... cm

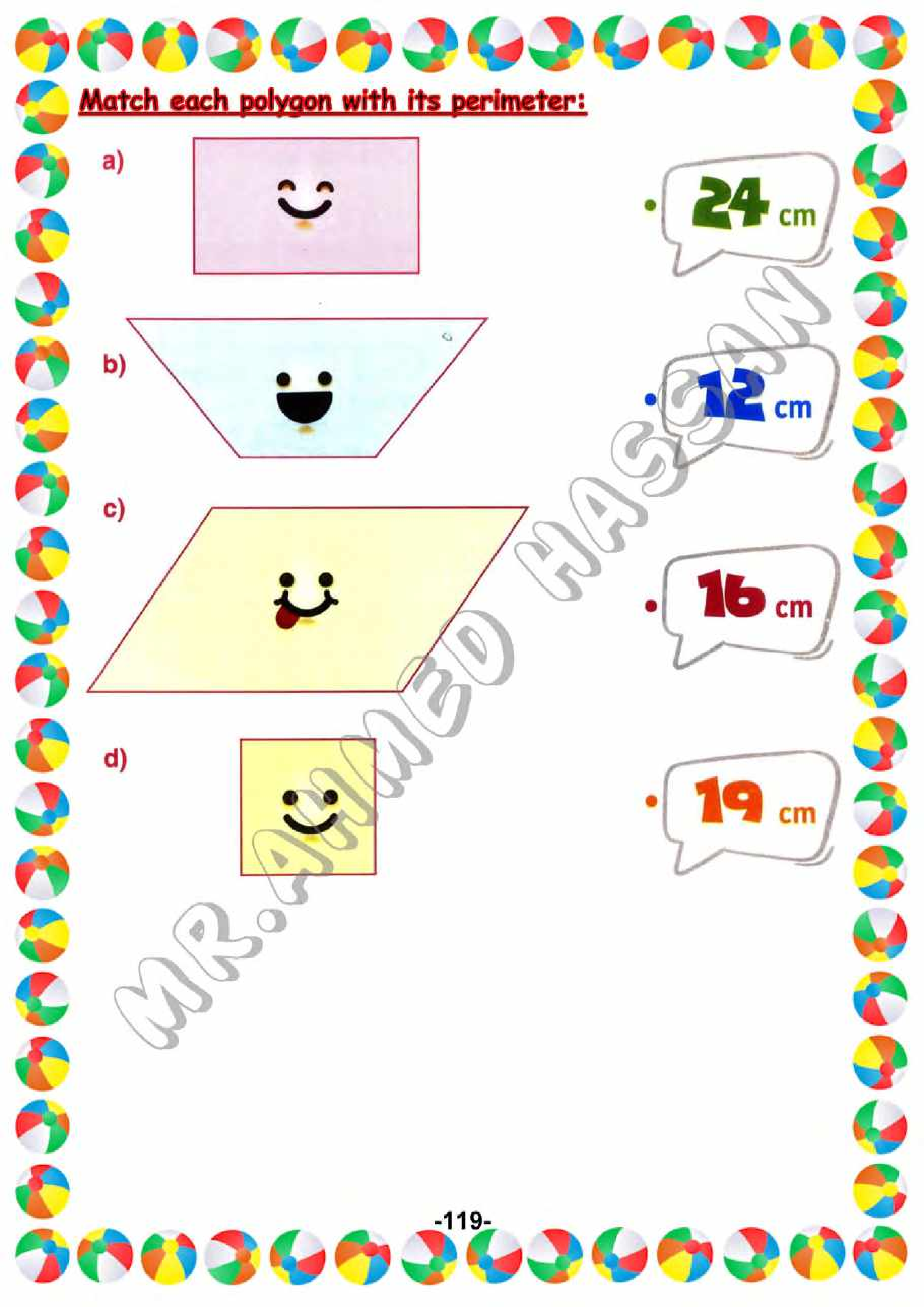
c)

The estimated perimeter is about .... cm.
Actual perimeter = ... cm

d)

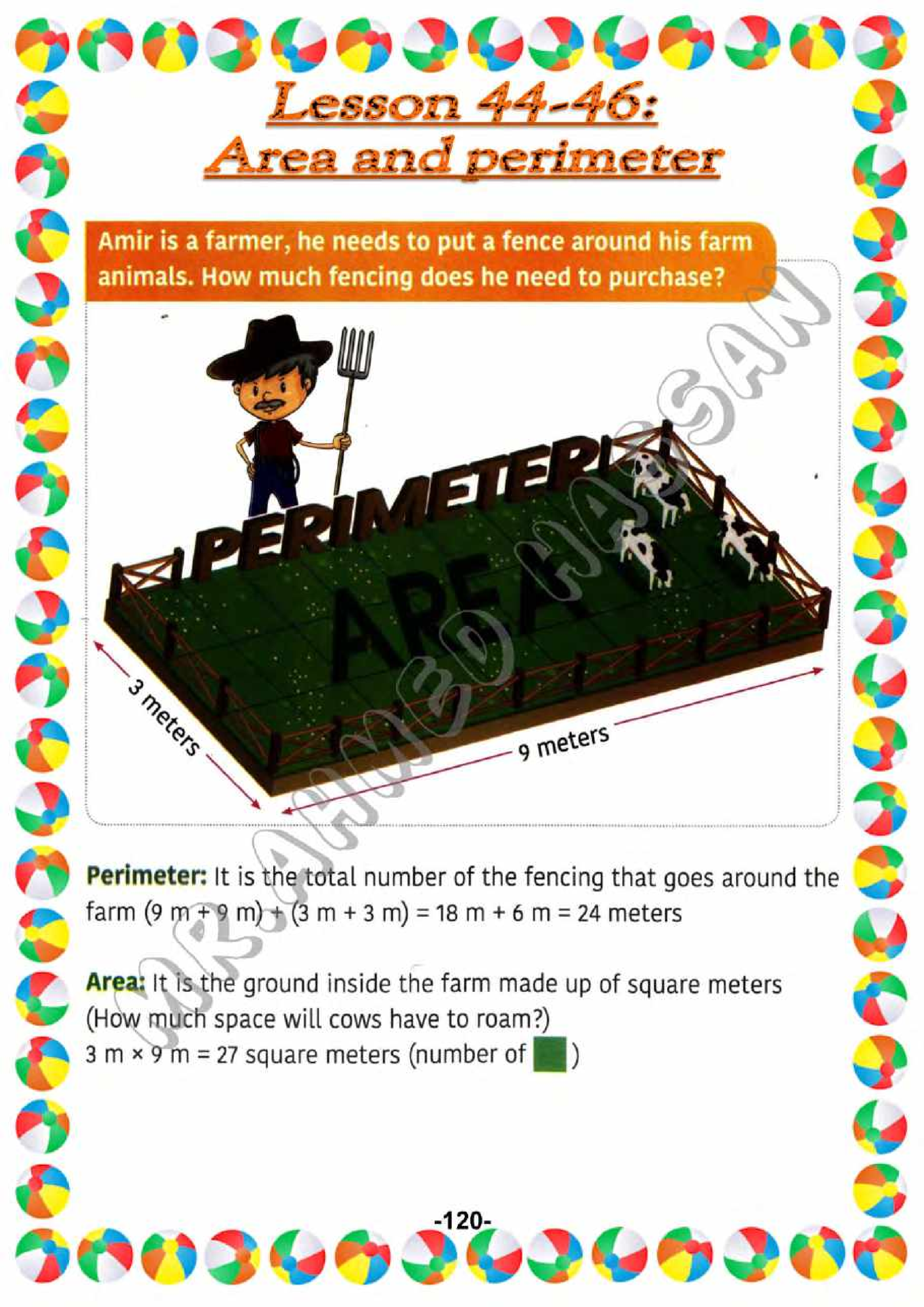
The estimated perimeter is about .... cm.
Actual perimeter = ... cm

Match each polygon with its perimeter:



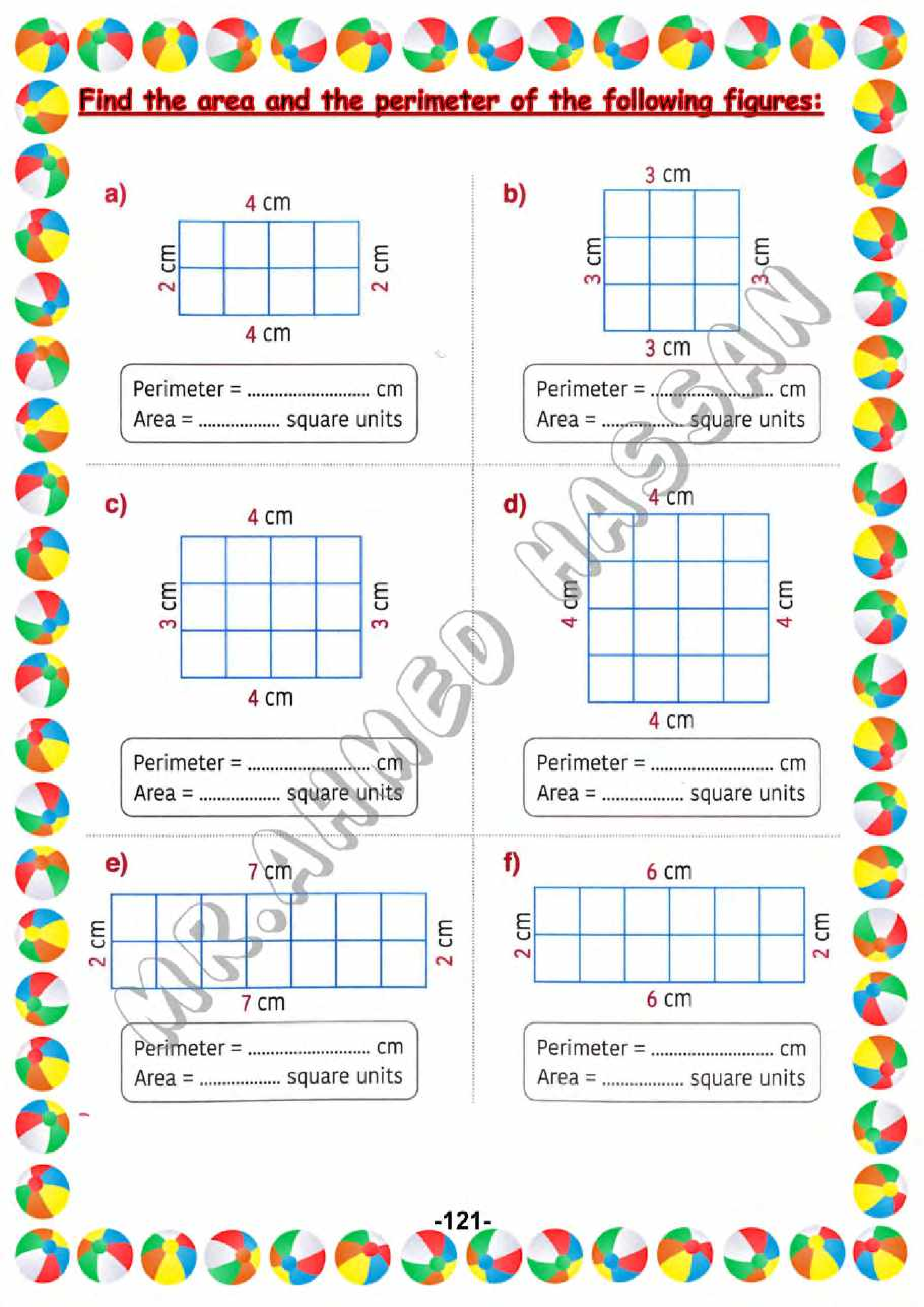
Lesson 44-46: Area and perimeter

Amir is a farmer, he needs to put a fence around his farm animals. How much fencing does he need to purchase?



Perimeter: It is the total number of the fencing that goes around the farm (9 m + 9 m) + (3 m + 3 m) = 18 m + 6 m = 24 meters

Area: It is the ground inside the farm made up of square meters (How much space will cows have to roam?)
3 m × 9 m = 27 square meters (number of ■)



Find the area and the perimeter of the following figures:

a) Perimeter = ... cm
Area = ... square units

b) Perimeter = ... cm
Area = ... square units

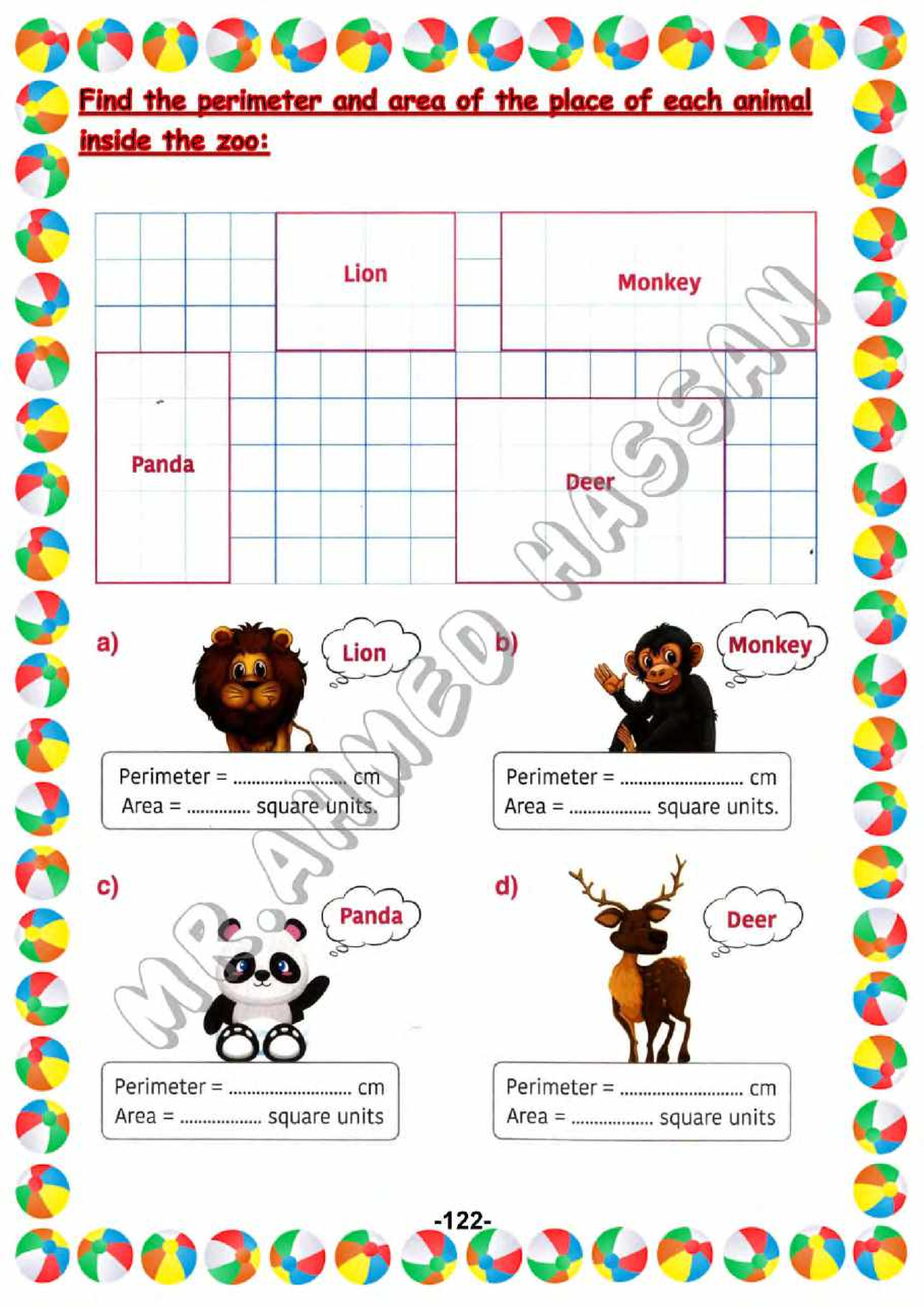
c) Perimeter = ... cm
Area = ... square units

d) Perimeter = ... cm
Area = ... square units

e) Perimeter = ... cm
Area = ... square units

f) Perimeter = ... cm
Area = ... square units

Find the perimeter and area of the place of each animal inside the zoo:



a) Lion

Perimeter = ... cm
Area = ... square units.

b) Monkey

Perimeter = ... cm
Area = ... square units.

c) Panda

Perimeter = ... cm
Area = ... square units

d) Deer

Perimeter = ... cm
Area = ... square units

Using different strategies to calculate area

Calculate the area using different strategies:

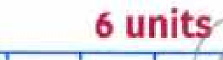
- **First:** Repeated addition:

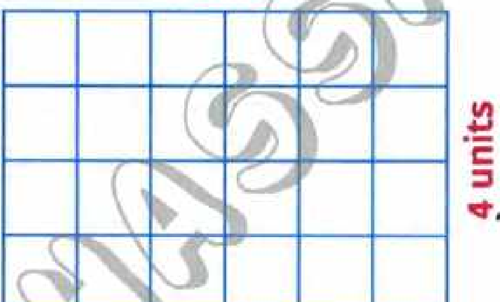
4 rows of 6:

$6 + 6 + 6 + 6 = 24$ square units

6 columns of 4:

$4 + 4 + 4 + 4 + 4 + 4 = 24$ square units





- **Second:** Multiply:

$6 \times 4 = 24$ square units

$4 \times 6 = 24$ square units

- **Third:** Distributive strategy:

break down 6 into (3+3):

$(4 \times 3) + (4 \times 3)$

$(12) + (12) = 24$ square units

How can we find the area of rectangles without squares inside them?

5 cm

3 cm

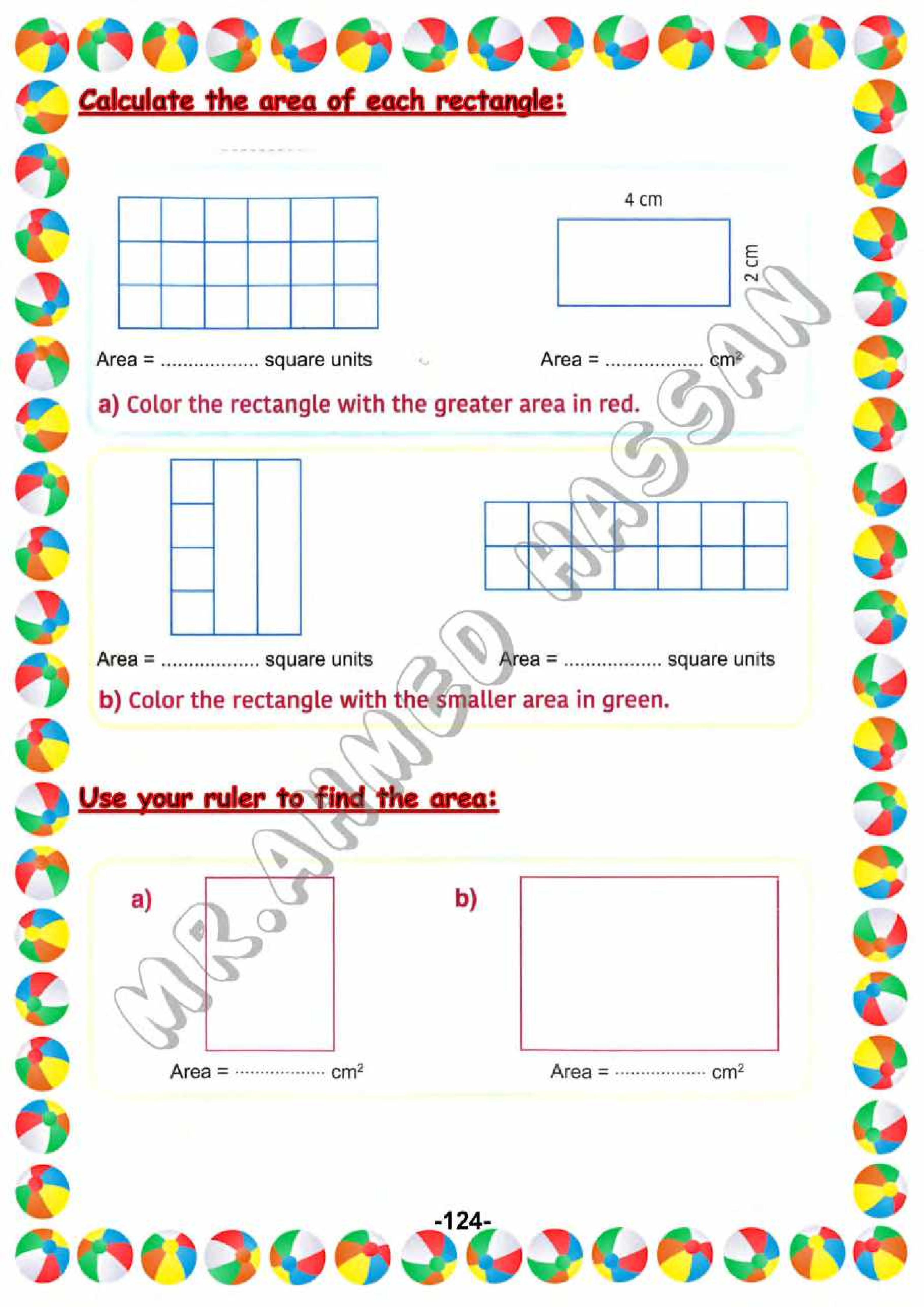
We should use the dimensions
Length × Width
Area = **5 cm** × **3 cm** =
15 cm² square units





Area = length x width
$= 4\ m \times 2\ m = 8\ m^2$
(meter square)

We can represent the area by 2 units:
centimeter square (cm^2)
meter square (m^2)



Calculate the area of each rectangle:

4 cm

2 cm

Area = ... square units

Area = ... cm^2

a) Color the rectangle with the greater area in red.

Area = ... square units

Area = ... square units

b) Color the rectangle with the smaller area in green.

Use your ruler to find the area:

a)

Area = ... cm^2

b)

Area = ... cm^2



Divide the square units to represent the area of each animal:

a) rabbit
14 square meters

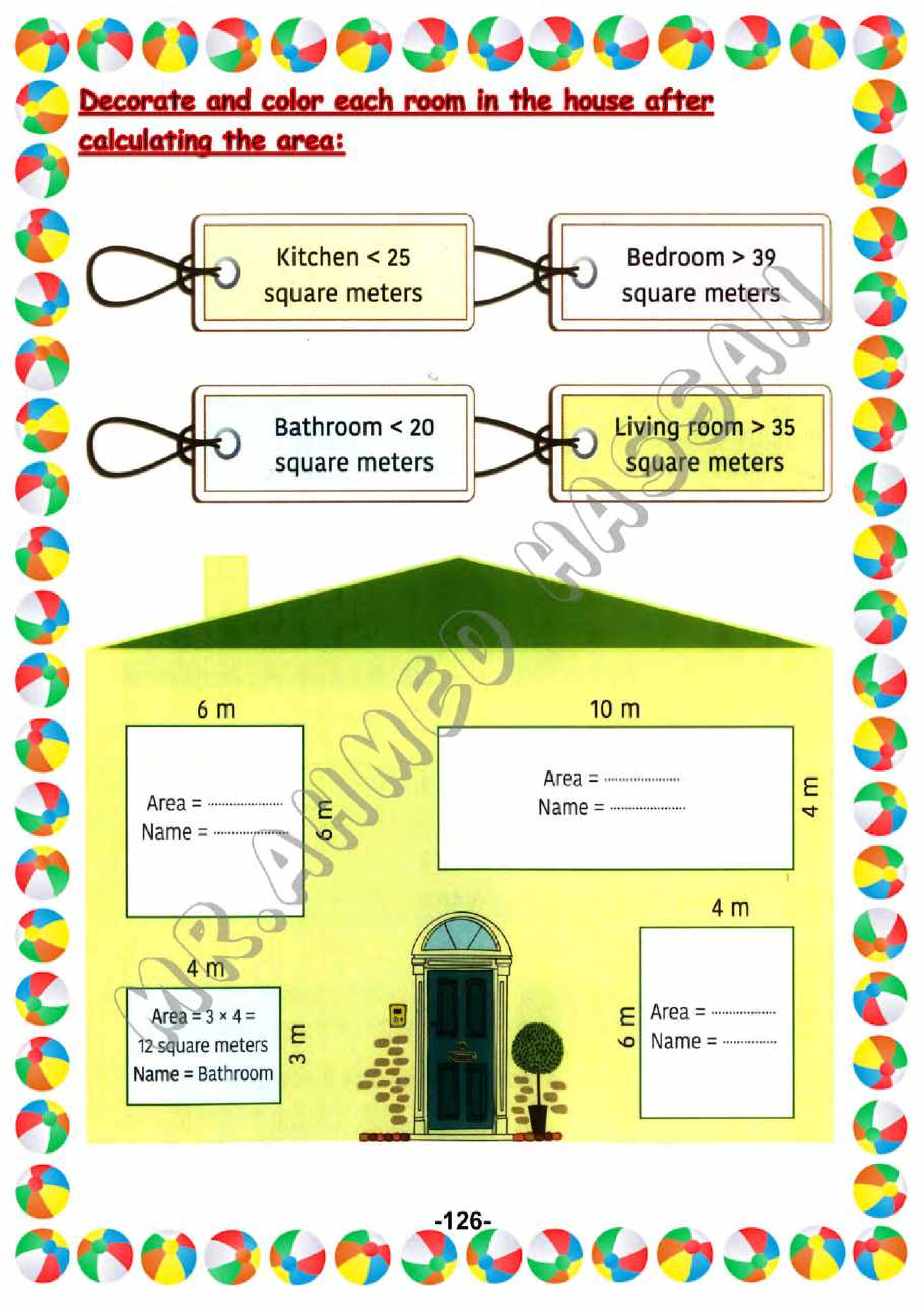
b) cow
30 square meters

c) duck
16 square meters

d) sheep
18 square meters

e) hen
20 square meters

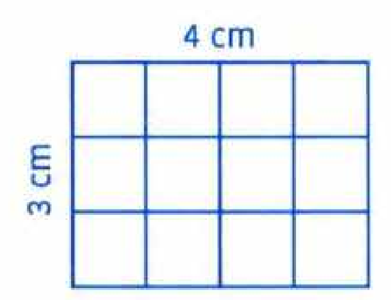
Decorate and color each room in the house after calculating the area:



Lessons 47-49: Rectangle

Rectangles with the same area

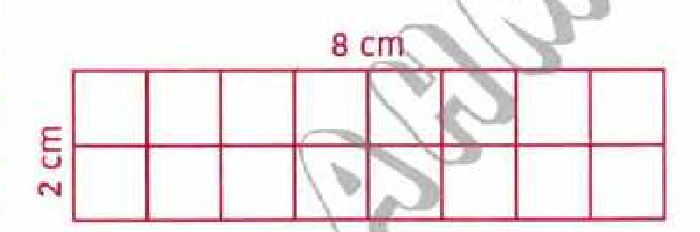
Do the rectangles that have the same area must have also the same perimeters?

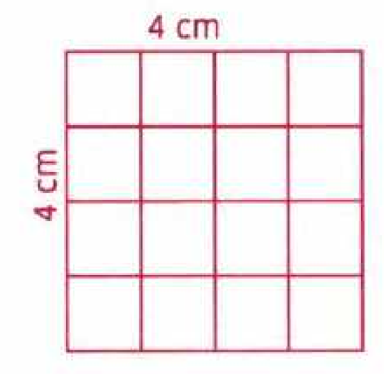




Area = 3 × 4 = 12 square units
Perimeter = 3 + 4 + 3 + 4 = 14 cm

Area = 6 × 2 = 12 square units
Perimeter = 6 + 2 + 6 + 2 = 16 cm

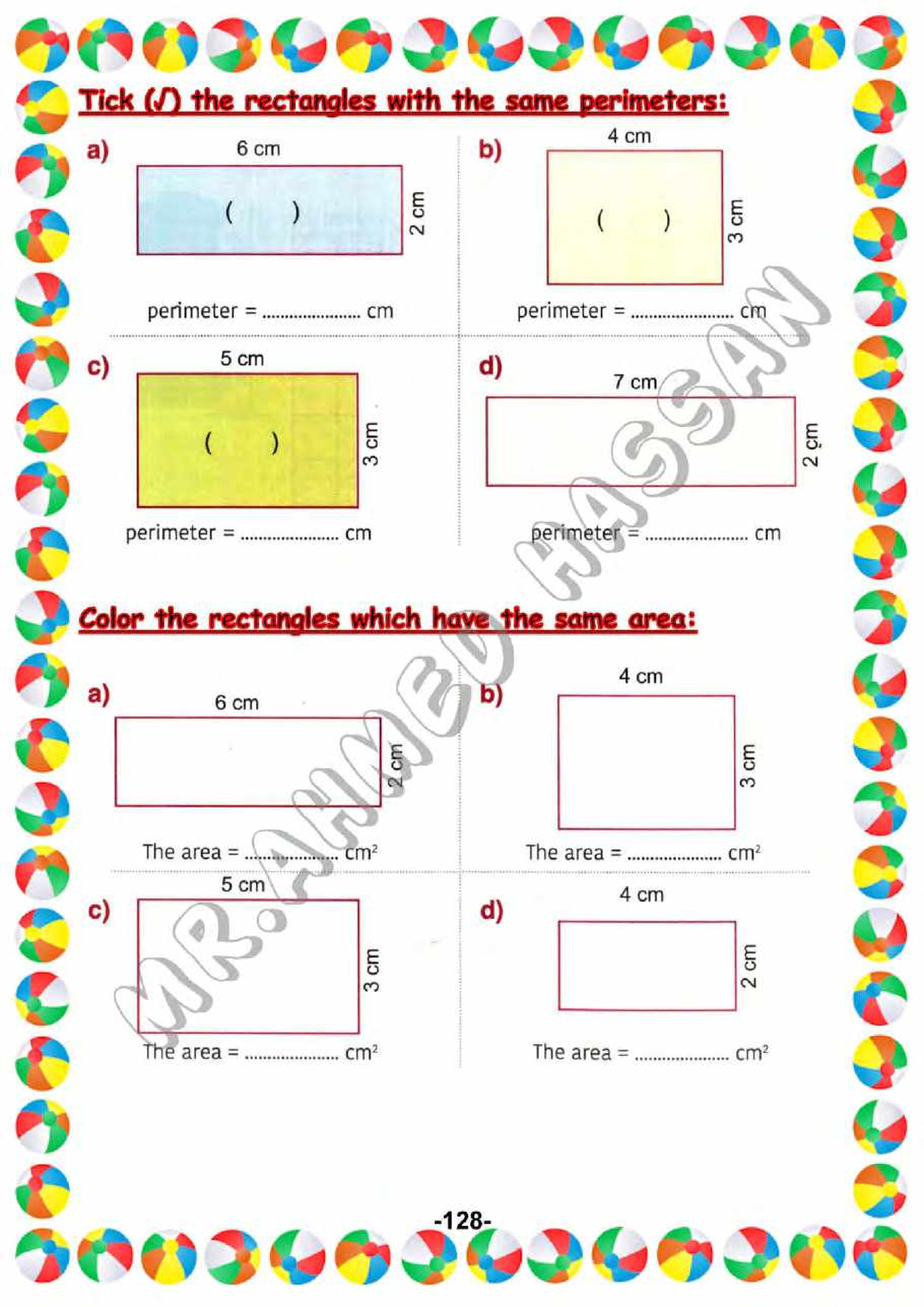




Area = 2 × 8 = 16 square units
Perimeter = 2 + 8 + 2 + 8 = 20 cm

Area = 4 × 4 = 16 square units
Perimeter = 4 + 4 + 4 + 4 = 16 cm

We notice that the two rectangles can have the same areas but different perimeters.



Tick (√) the rectangles with the same perimeters:

a) 6 cm, 2 cm ( )

perimeter = ... cm

b) 4 cm, 3 cm ( )

perimeter = ... cm

c) 5 cm, 3 cm ( )

perimeter = ... cm

d) 7 cm, 2 cm

perimeter = ... cm

Color the rectangles which have the same area:

a) 6 cm, 2 cm

The area = ... cm^2

b) 4 cm, 3 cm

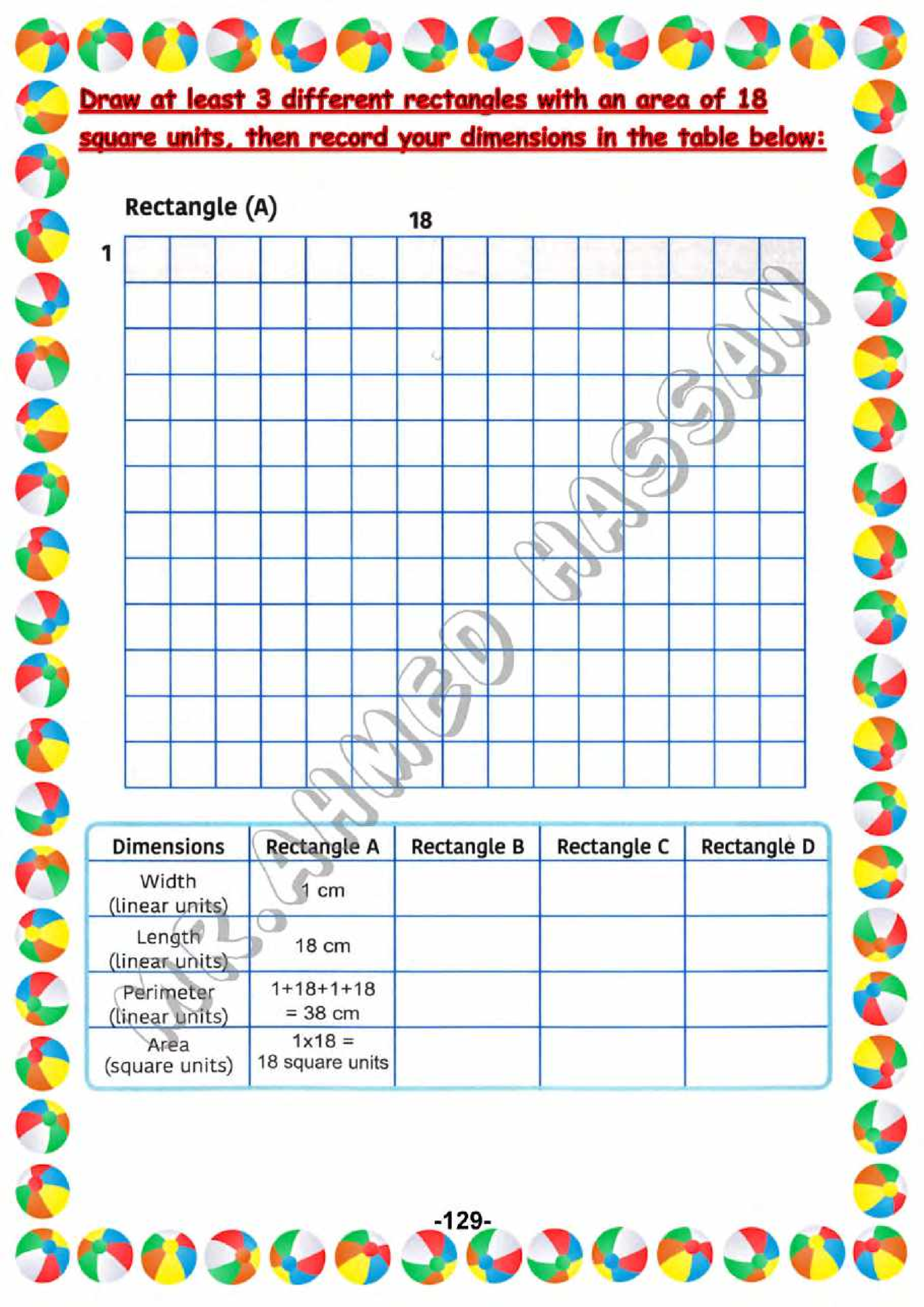
The area = ... cm^2

c) 5 cm, 3 cm

The area = ... cm^2

d) 4 cm, 2 cm

The area = ... cm^2



Draw at least 3 different rectangles with an area of 18 square units, then record your dimensions in the table below:

Rectangle (A)

Dimensions	Rectangle A	Rectangle B	Rectangle C	Rectangle D
Width (linear units)	1 cm			
Length (linear units)	18 cm			
Perimeter (linear units)	1+18+1+18 = 38 cm			
Area (square units)	1x18 = 18 square units			

Rectangles with the same perimeter

Do the rectangles that have the same perimeters must have also the same areas?

Length = 5 cm
Width = 2 cm
Perimeter = 5 + 5 + 2 + 2 = 14 cm
Area = $5 \times 2 = 10$ cm^2

5 cm
2 cm

Length = 6 cm
Width = 1cm
Perimeter = 6 + 6 + 1 + 1 = 14 cm
Area = $6 \times 1 = 6$ cm^2

6 cm
1 cm

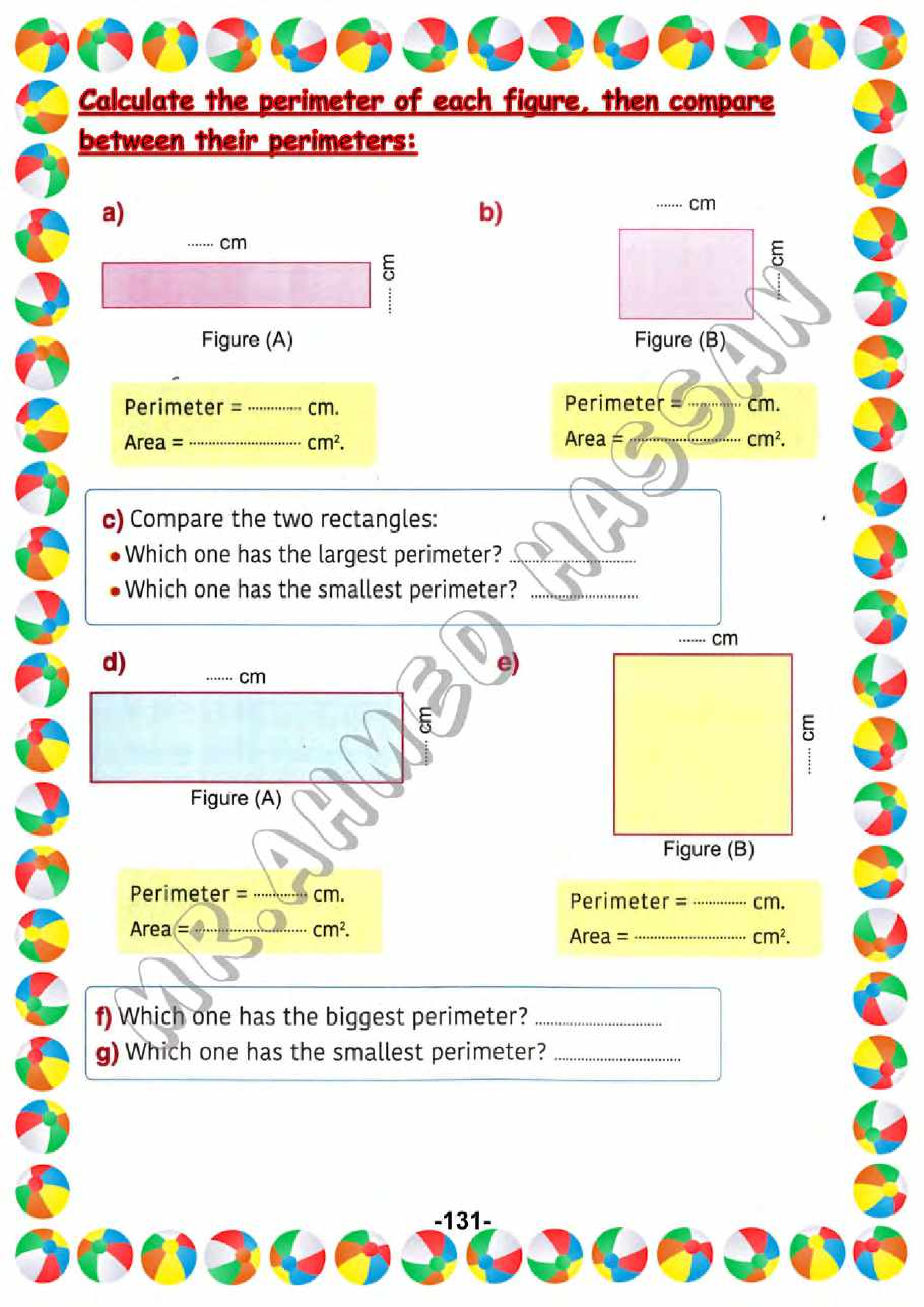
Length = 4 cm
Width = 3 cm
Perimeter = 4 + 4 + 3 + 3 = 14 cm
Area = $4 \times 3 = 12$ cm^2

4 cm
3 cm

To draw two rectangles with the same perimeter.
the total sum of sides of the first rectangle = the total sum of sides of the second rectangle



We notice that the two rectangles can have the same perimeter but different areas.



Calculate the perimeter of each figure, then compare between their perimeters:

a)

.... cm

.... cm

Figure (A)

Perimeter = ... cm.

Area = ... cm².

b)

.... cm

.... cm

Figure (B)

Perimeter = ... cm.

Area = ... cm².

c) Compare the two rectangles:

- Which one has the largest perimeter? ....
- Which one has the smallest perimeter? ....

d)

.... cm

.... cm

Figure (A)

Perimeter = ... cm.

Area = ... cm².

e)

.... cm

.... cm

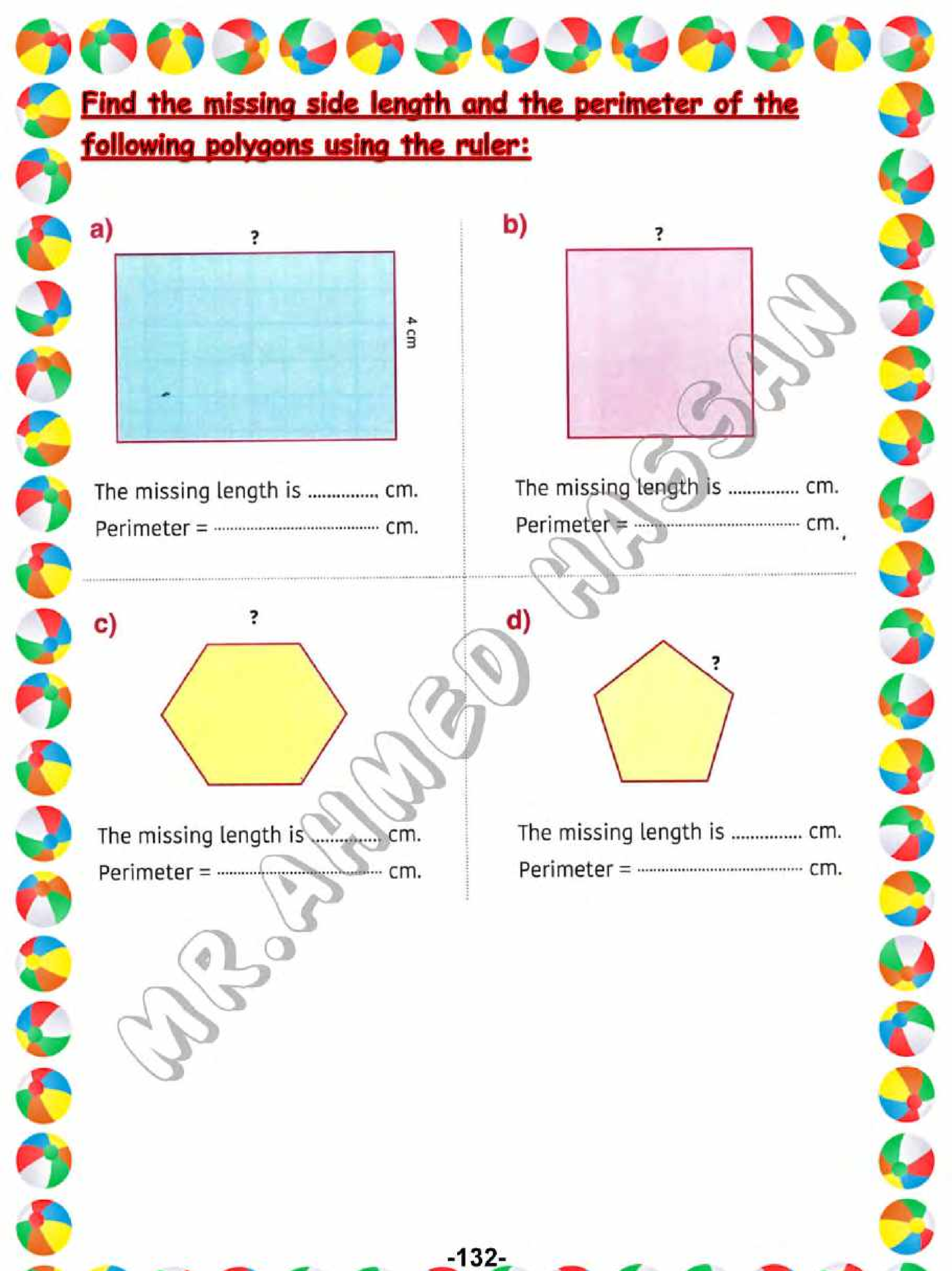
Figure (B)

Perimeter = ... cm.

Area = ... cm².

f) Which one has the biggest perimeter? ....

g) Which one has the smallest perimeter? ....



Find the missing side length and the perimeter of the following polygons using the ruler:

a)

?

4 cm

The missing length is .... cm.

Perimeter = ... cm.

b)

?

The missing length is .... cm.

Perimeter = ... cm.

c)

?

The missing length is .... cm.

Perimeter = ... cm.

d)

?

The missing length is .... cm.

Perimeter = ... cm.



Area and perimeter story problems

Nadia has just bought a new dog. She needs to build a fence around her rectangular backyard. If the fence has a length of 8 m and a width of 6 m, how many meters of fencing does Nadia need to buy?

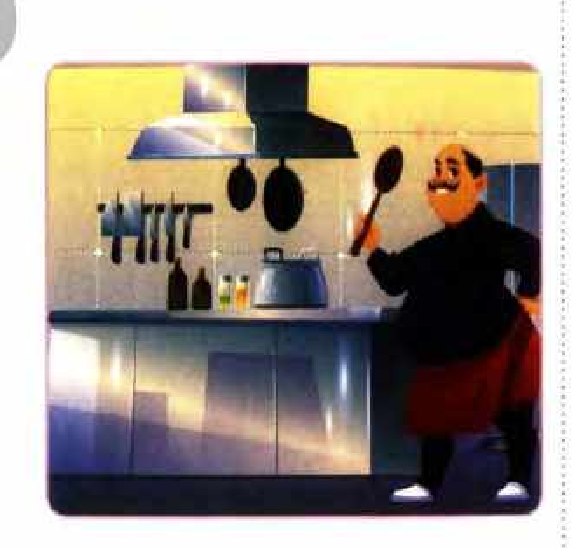


To know how much wood she needs, we have to calculate the perimeter.

Perimeter = (6 + 8) + (6 + 8)

= 28 meters of fence

Sherif wants to tile the kitchen floor. If the floor is 3 meters long and 4 meters wide, how many tiles will he need to cover the kitchen floor?



To know how many tiles, we have to calculate the area.

Area = 3 X 4 = 12 tiles



Answer the following problems:

a) **Mariam** is sewing a border on a square baby blanket. The length of the blanket is 60 centimeters and the width is 15 centimeters. How long will the border be?

Perimeter = ...

b) **Tamer** wants new carpeting for his bedroom. His room is a 9 meters by 7 meters rectangle. How much carpeting does he need to buy to cover his entire bedroom floor?

Area = ...



Use the given pictures to form your story problem to represent the given equations:

Planting the garden

....

....

....

....

a) $5 \times 4 = 20$ square units

Decorating the room

....

....

....

....

b) $3 + 5 + 3 + 5 = 16$ meters

Lesson 50: Multiplying by 10

We can solve problems that have multiples of 10 using 2 strategies.

First strategy:

Break apart strategy:

To solve 2 x 30

Think of it as 2 x 3 = 6, then add the zero

So, 2 x 30 = 60

and 2 x 300 = 600

$2 \times 3 = 6$	$2 \times 30 = 60$	$2 \times 300 = 600$
$12 \times 1 = 12$	$12 \times 10 = 120$	$12 \times 100 = 1200$

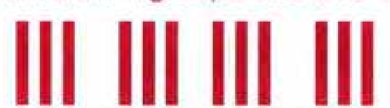
Second strategy:

Using a quick drawing of a base ten blocks:

For the equation 2 × 30 = 60
you can draw 2 groups of 3 tens each.

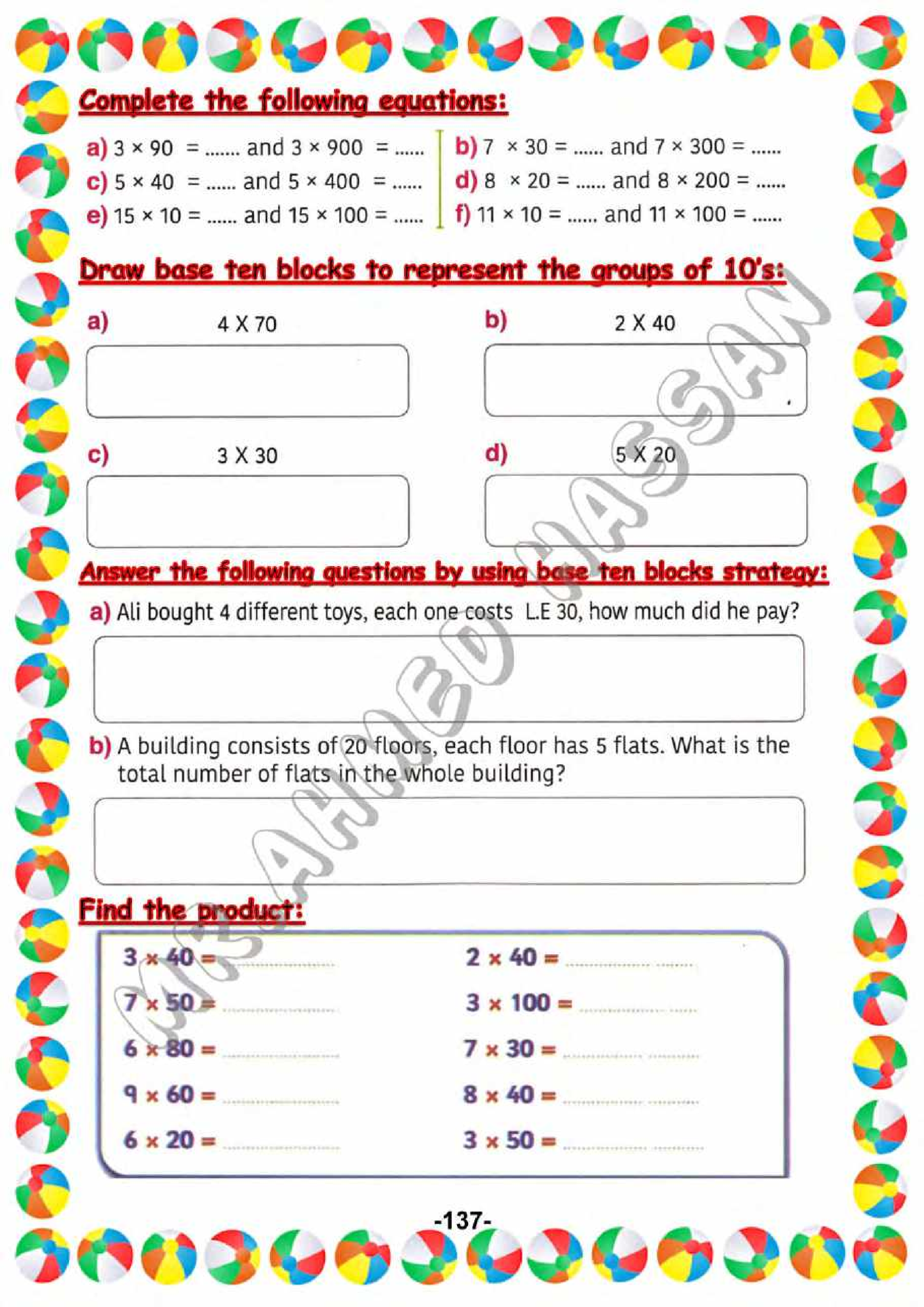
III III

For the equation 4 × 30 =120
you can draw 4 groups of 3 tens each.



We will use one straight line to represent the tens rod. So, we will just draw one straight line to help us with drawing the problems of multiples of 10.





Complete the following equations:

a) 3 × 90 = ... and 3 × 900 = ...
b) 7 × 30 = ... and 7 × 300 = ...
c) 5 × 40 = ... and 5 × 400 = ...
d) 8 × 20 = ... and 8 × 200 = ...
e) 15 × 10 = ... and 15 × 100 = ...
f) 11 × 10 = ... and 11 × 100 = ...

Draw base ten blocks to represent the groups of 10's:

a) 4 X 70

b) 2 X 40

c) 3 X 30

d) 5 X 20

Answer the following questions by using base ten blocks strategy:

a) Ali bought 4 different toys, each one costs L.E 30, how much did he pay?

b) A building consists of 20 floors, each floor has 5 flats. What is the total number of flats in the whole building?

Find the product:

3 × 40 = ...
2 × 40 = ...
7 × 50 = ...
3 × 100 = ...
6 × 80 = ...
7 × 30 = ...
9 × 60 = ...
8 × 40 = ...
6 × 20 = ...
3 × 50 = ...

Lesson 51: Patterns of multiplying by 10

Can you notice the pattern of multiplying by 10's?



3 × 5 = 15	5 × 4 = 20
3 × 50 = 150	5 × 40 = 200
3 × 500 = 1500	5 × 400 = 2000

It is an easy pattern, but what if we start the pattern from 40 x 5

We can use 2 strategies:

First: Break apart strategy

40 x 3

(4 x 3) x 10

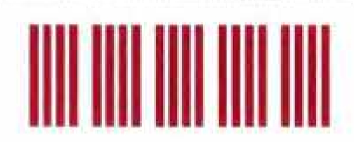
12 x 10 = 120

First : Start with (12 × 1) = 12

Second : put the zero to the right of the product 120

40 x 3 = 120

Second: Using drawing line strategy



5 groups of 40 = 200

Note that:

- **We need to put these marks ( ) which are called parentheses to tell us which part of the problem to solve first.**
- **We can multiply the numbers in any order**

50 x 3 or 3 x 50



Solve the following problems:

Example

20 × 4 =

(2 × 4) × 10 = 80

a) 3 × 60 =

(............ × ....) × 10 =............

b) 50 × 2 =

(............ × ....) × 10 =............

c) 6 × 20 =

(............ × ....) × 10 =............

d) 9 × 30 =

(.......... × ....) × .... = ...

e) 60 × 6 =

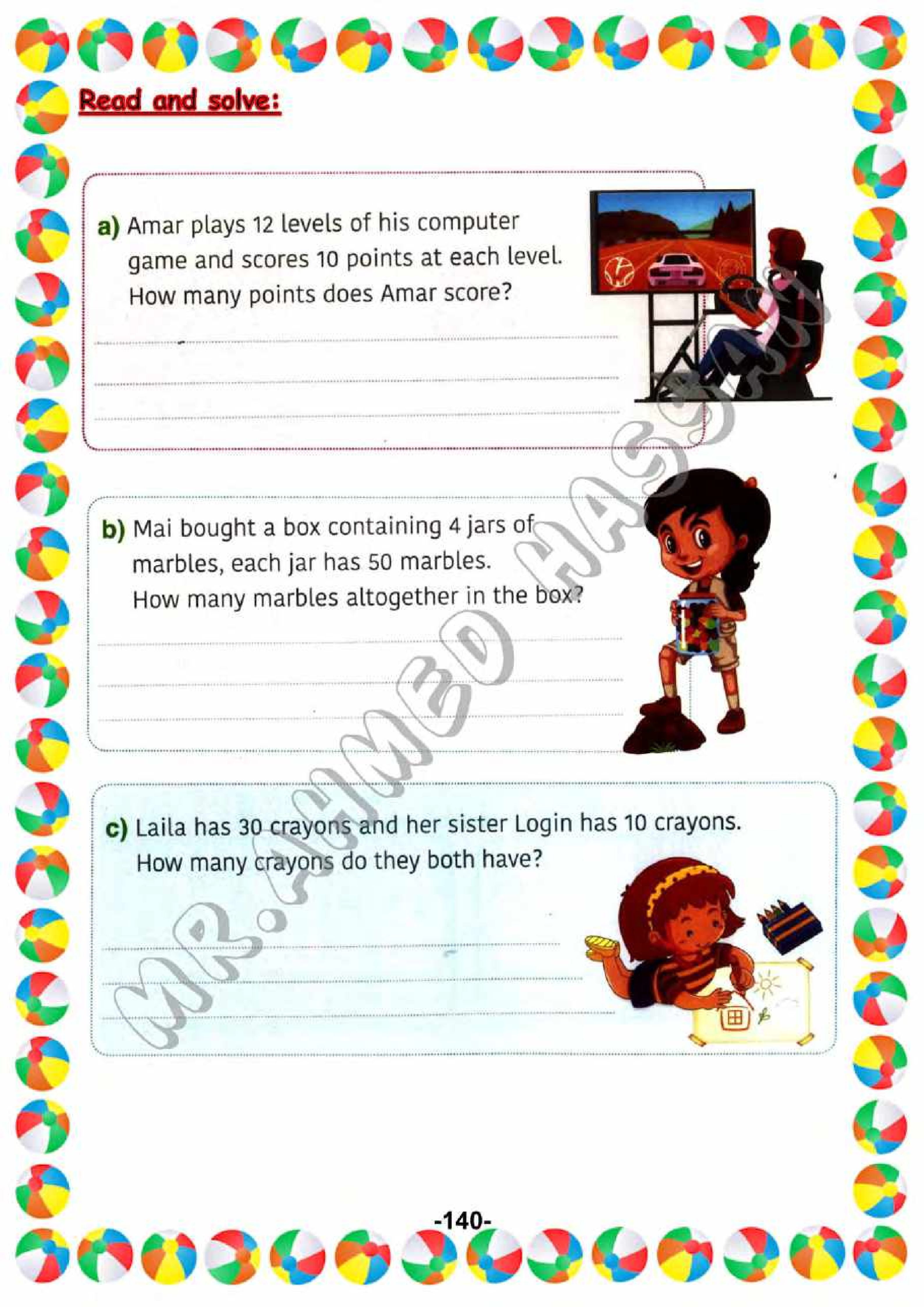
(.......... × ....) × .... = ...

f) 10 × 20 =

(.......... × ....) × .... = ...

g) 4 × 30 =

(.......... × ....) × .... = ...



Read and solve:

a) Amar plays 12 levels of his computer game and scores 10 points at each level.
How many points does Amar score?

....

....

....

b) Mai bought a box containing 4 jars of marbles, each jar has 50 marbles.
How many marbles altogether in the box?

....

....

....

c) Laila has 30 crayons and her sister Login has 10 crayons.
How many crayons do they both have?

....

....

....

Solve the following problems:



a) 30 × 7 = ...

c) 50 × 3 = ...

e) 10 × 9 = ...

g) 90 × 6 = ...

i) 80 × 1 = ...

k) 20 × 5 = ...

m) 40 × 2 = ...

o) 30 × 4 = ...

b) 2 × 50 = ...

d) 9 × 30 = ...

f) 5 × 40 = ...

h) 3 × 80 = ...

j) 7 × 50 = ...

l) 2 × 10 = ...

n) 4 × 20 = ...

p) 5 × 90 = ...

q) 8 × 60 = ...

Lesson 52: Multiplying by 9

First Finger trick strategy

To solve 9×7

First:

- Hold your fingers up.
- Start from left and bend (put down) the 7th finger.

Before After

10 20 30 40 50 60 1 2 3

7th

Second:

Read the product:

before after

6 fingers in tens 7th finger 3 fingers in ones

↓ 60 ↓ 3

There are 6 fingers before finger, we count them as 60

There are 3 fingers after finger, we count them as 3

So $9 \times 7 = 63$



Timetable of 9 (from 1 - 5)

9 × 1 = 09

9 × 2 = 18

9 × 3 = 27

9 × 4 = 36

9 × 5 = 45

Timetable of 9 (from 6 - 10)

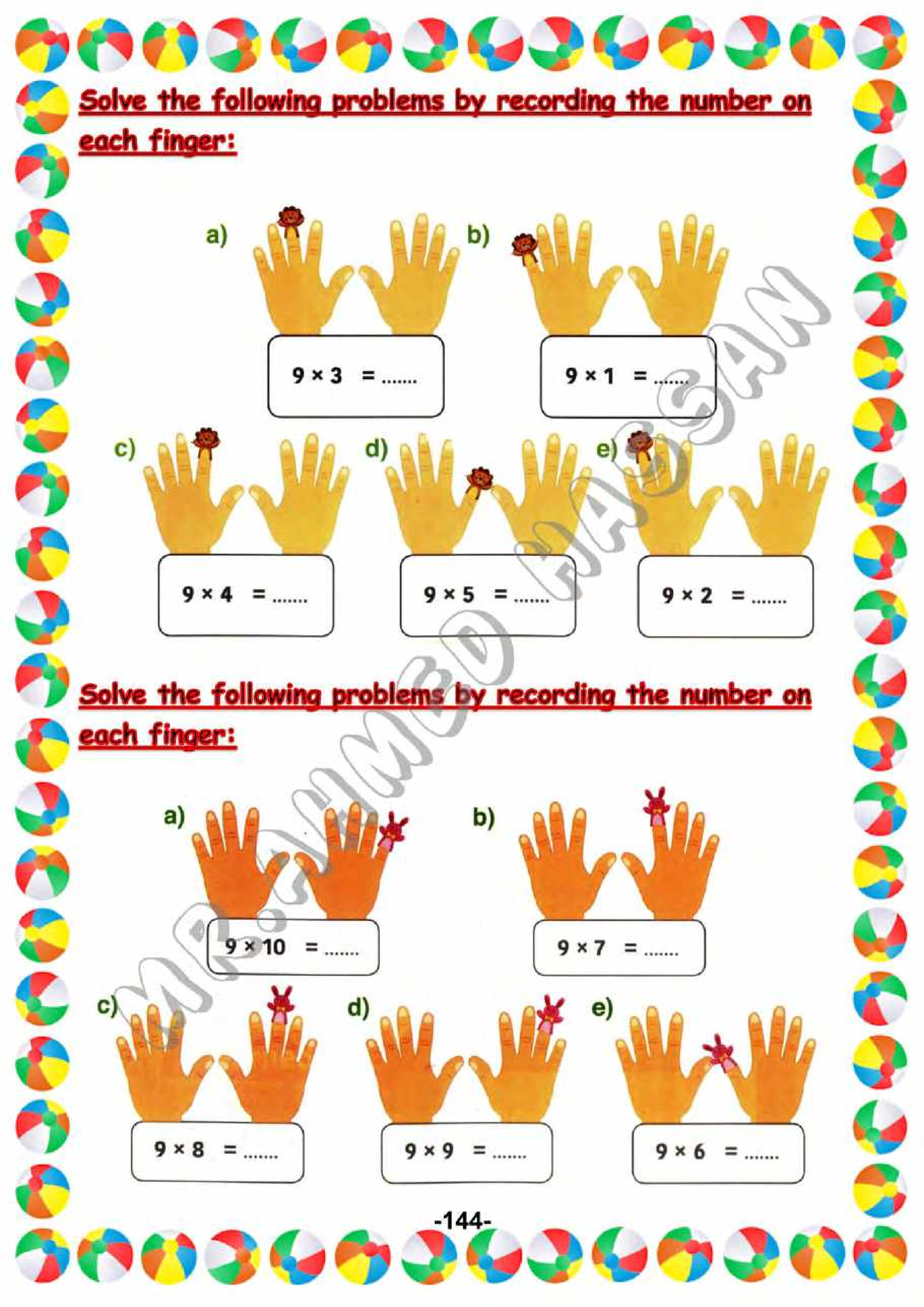
9 × 6 = 54

9 × 7 = 63

9 × 8 = 72

9 × 9 = 81

9 × 10 = 90



Solve the following problems by recording the number on each finger:

a) 9 × 3 = ...

b) 9 × 1 = ...

c) 9 × 4 = ...

d) 9 × 5 = ...

e) 9 × 2 = ...

Solve the following problems by recording the number on each finger:

a) 9 × 10 = ...

b) 9 × 7 = ...

c) 9 × 8 = ...

d) 9 × 9 = ...

e) 9 × 6 = ...



Second | List of equation strategy

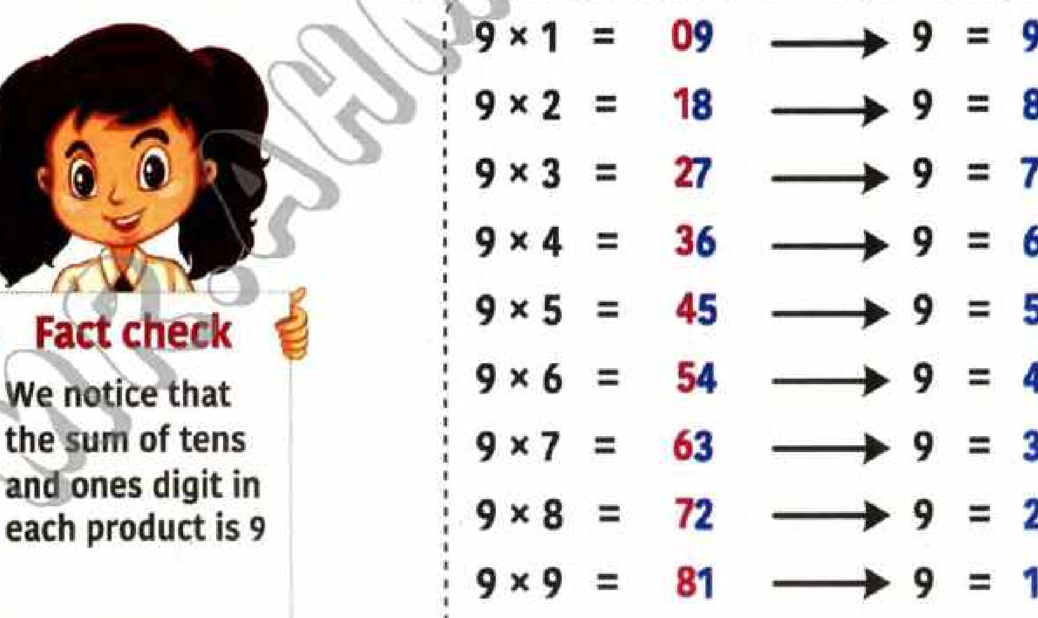
This strategy depends on determining the **2 patterns** by looking at the first 10 products when multiplying by 9.

9 × 1 =	09	↑
9 × 2 = ↓	18	
9 × 3 =	27	
9 × 4 =	36	
9 × 5 = ↓	45	↑
9 × 6 =	54	
9 × 7 =	63	
9 × 8 =	72	
9 × 9 = ↓	81	↑
9 × 10 =	90	

First, write the numbers 0 - 9 in downward ↓ direction.

Next, write the numbers 0 - 9 in upward ↑ direction.





Fact check

We notice that the sum of tens and ones digit in each product is 9



9 × 1 =	09	⟶	9 =	9 + 0
9 × 2 =	18	⟶	9 =	8 + 1
9 × 3 =	27	⟶	9 =	7 + 2
9 × 4 =	36	⟶	9 =	6 + 3
9 × 5 =	45	⟶	9 =	5 + 4
9 × 6 =	54	⟶	9 =	4 + 5
9 × 7 =	63	⟶	9 =	3 + 6
9 × 8 =	72	⟶	9 =	2 + 7
9 × 9 =	81	⟶	9 =	1 + 8
9 × 10 =	90	⟶	9 =	0 + 9

Third Tens facts strategy

To solve 9 × 5

First: We will think of 9 as 10
10 × 5 = 50

Second: Represent it as 10 groups of 5

5 5 5 5 5 5 5 5 5 5

Third Subtract one of the 5's to get 45

$$\begin{array}{r} 50 \\ -\ 5 \\ \hline 45 \end{array}$$

Fourth 120-chart strategy

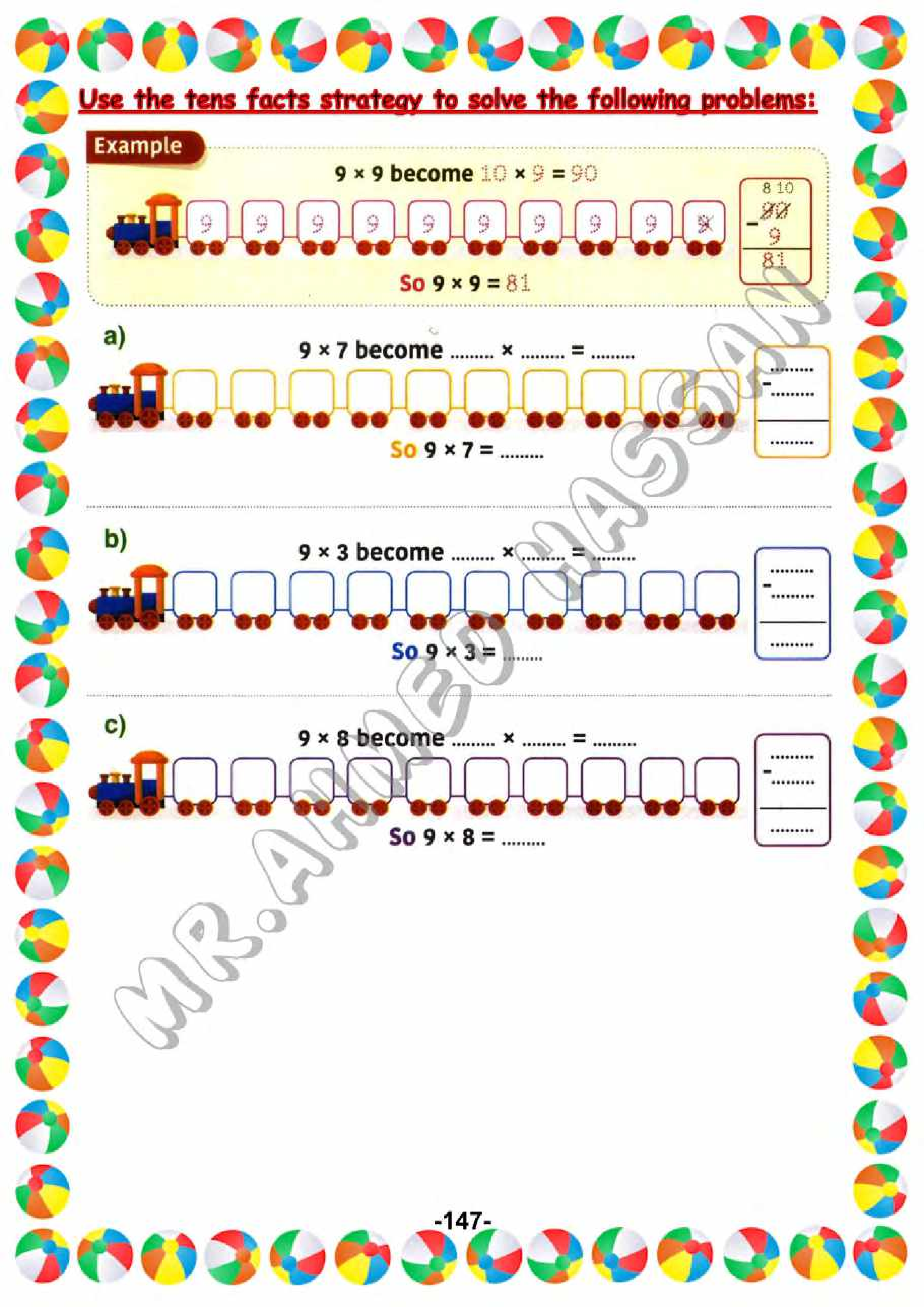
After we colored all the multiples of 9, we will notice a pattern.

This pattern which goes across the 120-chart helps us to remember the products of multiplying by 9.



120-chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120



Use the tens facts strategy to solve the following problems:

Example

9 × 9 become 10 × 9 = 90

9	9	9	9	9	9	9	9	9	~~9~~

$$\begin{array}{r} \overset{8\ 10}{\cancel{9}\cancel{0}} \\ -\ \ 9 \\ \hline 81 \end{array}$$

So 9 × 9 = 81

a)

9 × 7 become .... × .... = ...

So 9 × 7 = ...

b)

9 × 3 become .... × .... = ...

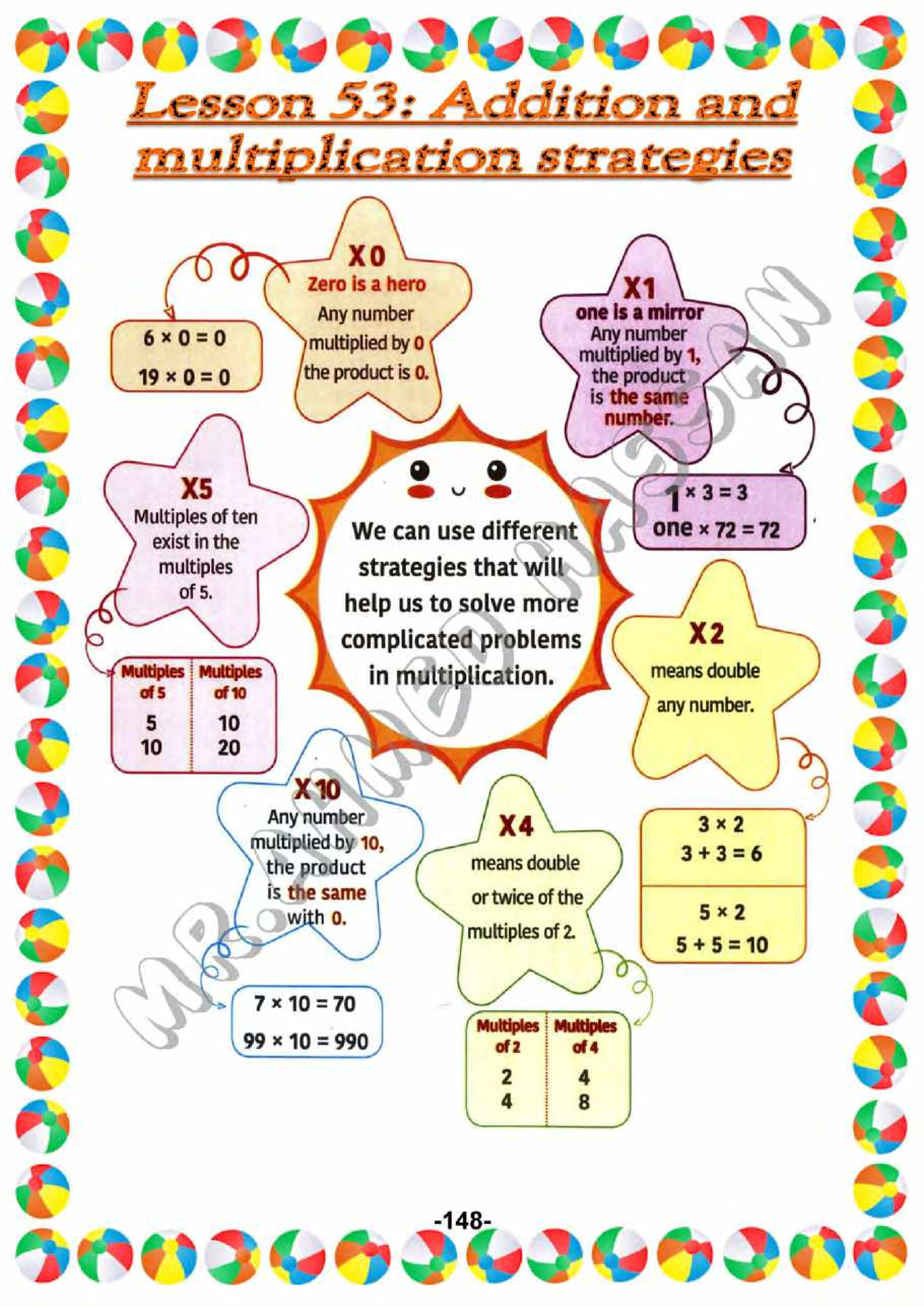
So 9 × 3 = ...

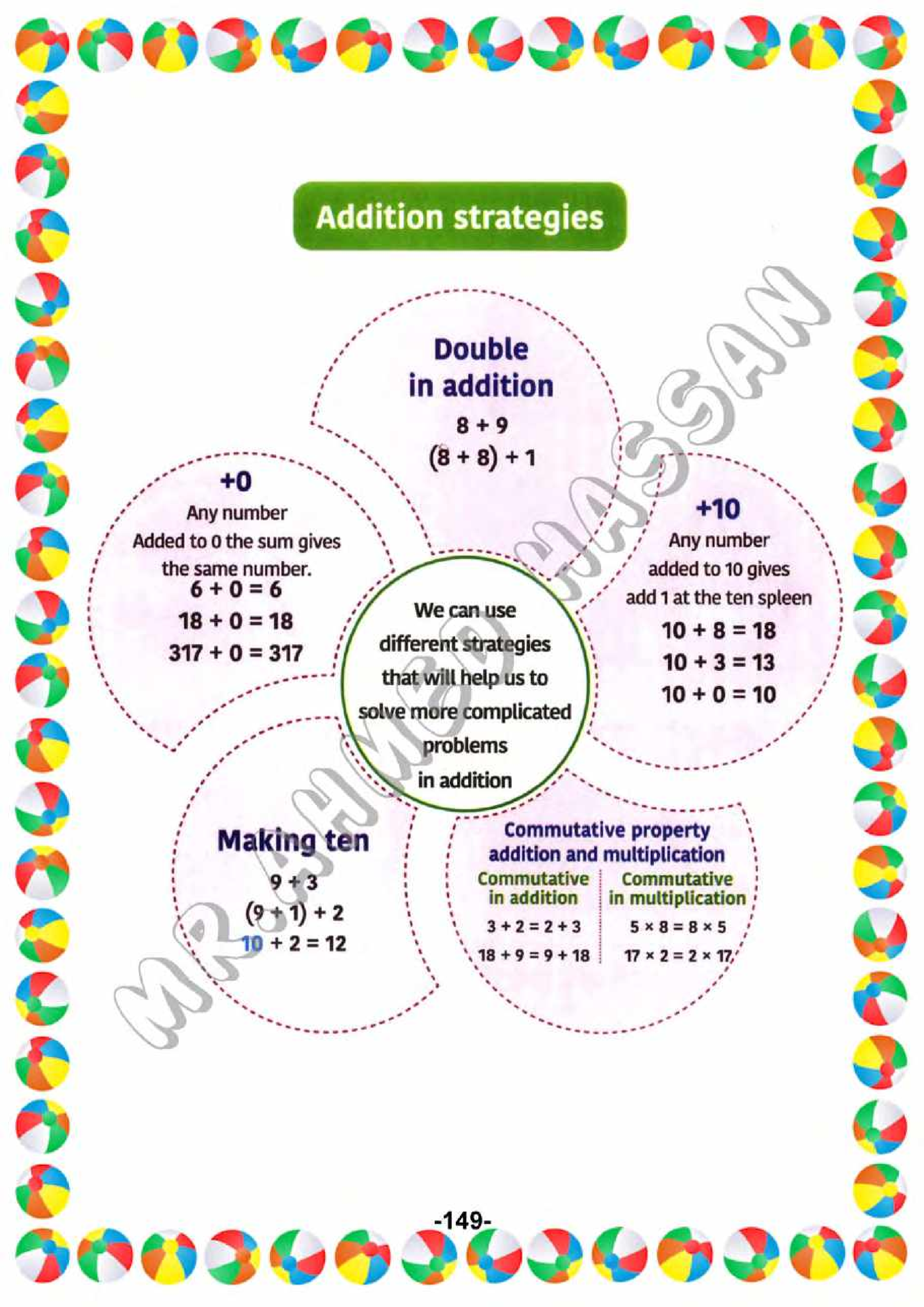
c)

9 × 8 become .... × .... = ...

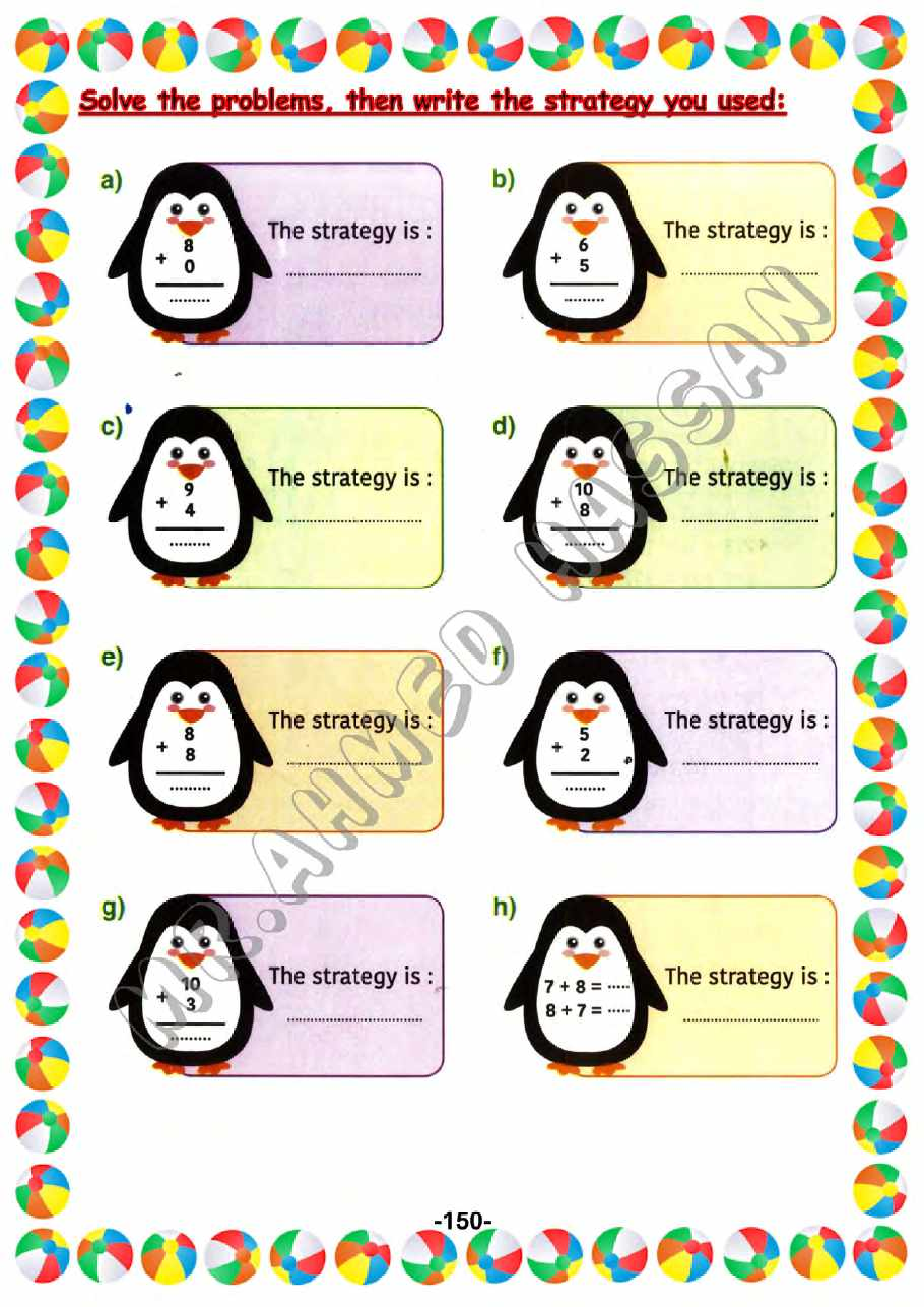
So 9 × 8 = ...

Lesson 53: Addition and multiplication strategies





Addition strategies



Solve the problems, then write the strategy you used:

a) $8 + 0 = ...$

The strategy is : ....

b) $6 + 5 = ...$

The strategy is : ....

c) $9 + 4 = ...$

The strategy is : ....

d) $10 + 8 = ...$

The strategy is : ....

e) $8 + 8 = ...$

The strategy is : ....

f) $5 + 2 = ...$

The strategy is : ....

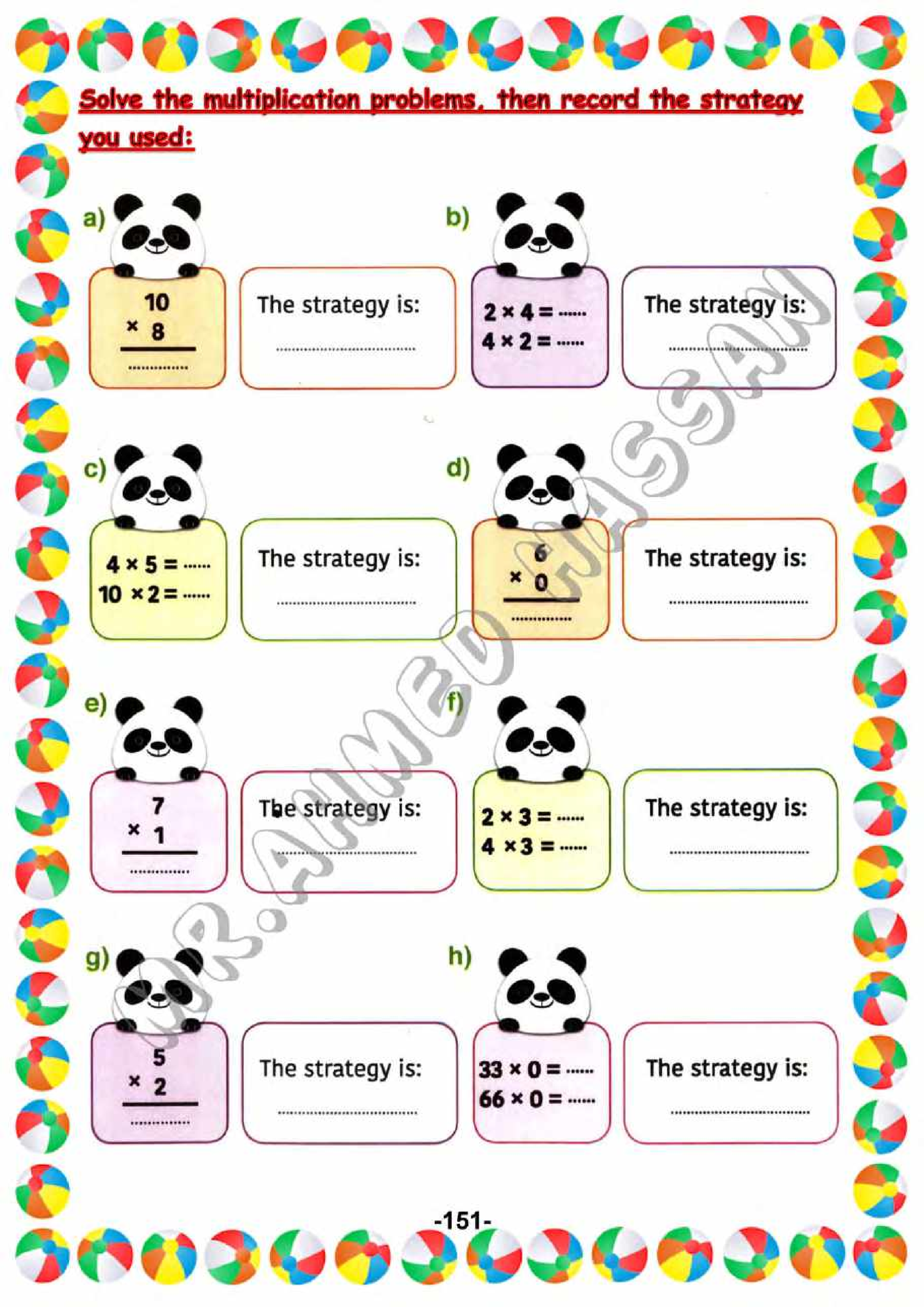
g) $10 + 3 = ...$

The strategy is : ....

h) $7 + 8 = ...$

$8 + 7 = ...$

The strategy is : ....



Solve the multiplication problems, then record the strategy you used:

a)
$$\begin{array}{r} 10 \\ \times\ 8 \\ \hline \dots\dots \end{array}$$
The strategy is: ....

b)
2 × 4 = ...
4 × 2 = ...
The strategy is: ....

c)
4 × 5 = ...
10 × 2 = ...
The strategy is: ....

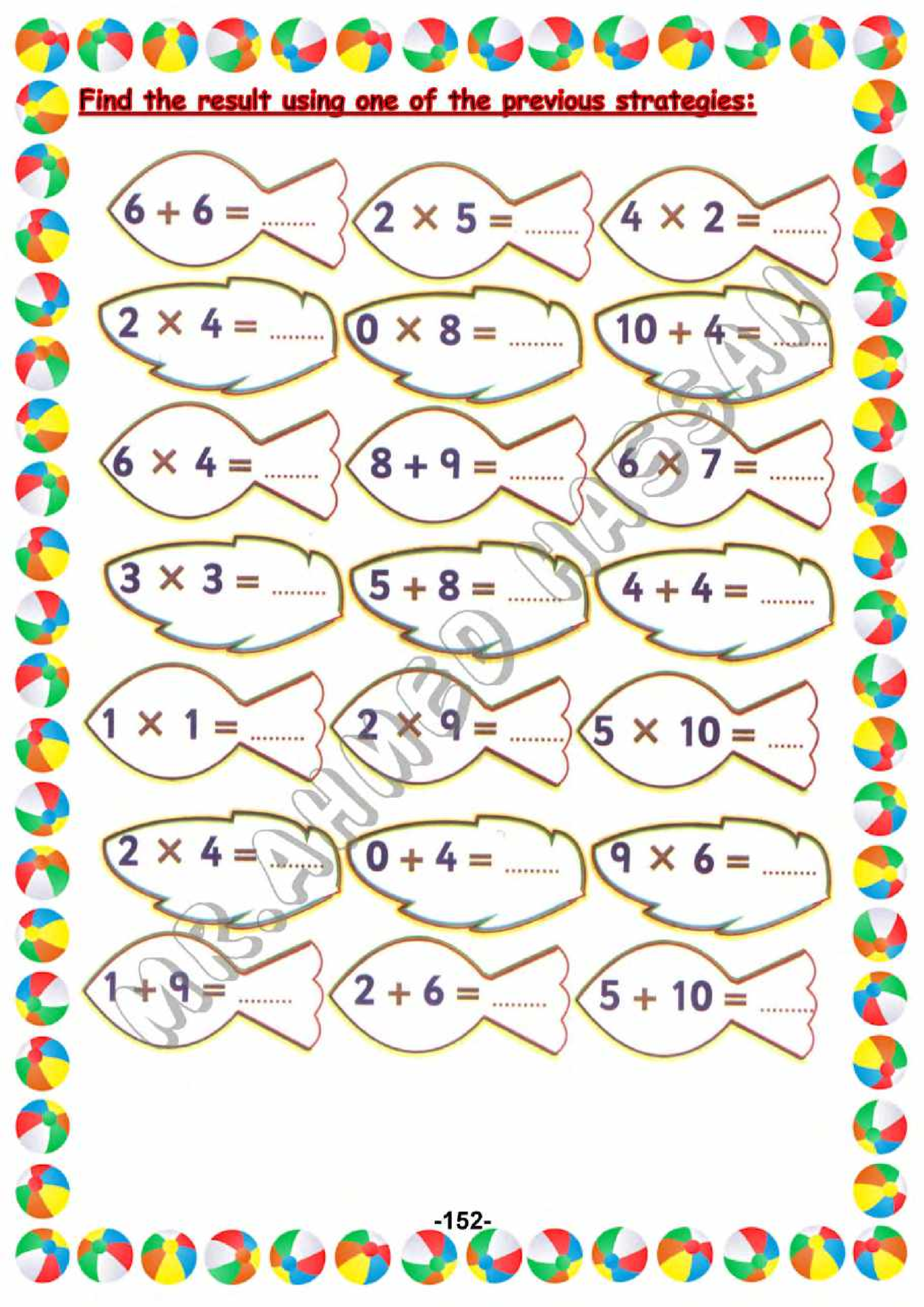
d)
$$\begin{array}{r} 6 \\ \times\ 0 \\ \hline \dots\dots \end{array}$$
The strategy is: ....

e)
$$\begin{array}{r} 7 \\ \times\ 1 \\ \hline \dots\dots \end{array}$$
The strategy is: ....

f)
2 × 3 = ...
4 × 3 = ...
The strategy is: ....

g)
$$\begin{array}{r} 5 \\ \times\ 2 \\ \hline \dots\dots \end{array}$$
The strategy is: ....

h)
33 × 0 = ...
66 × 0 = ...
The strategy is: ....



Find the result using one of the previous strategies:

$6 + 6 =$ .... $2 \times 5 =$ .... $4 \times 2 =$ ....

$2 \times 4 =$ .... $0 \times 8 =$ .... $10 + 4 =$ ....

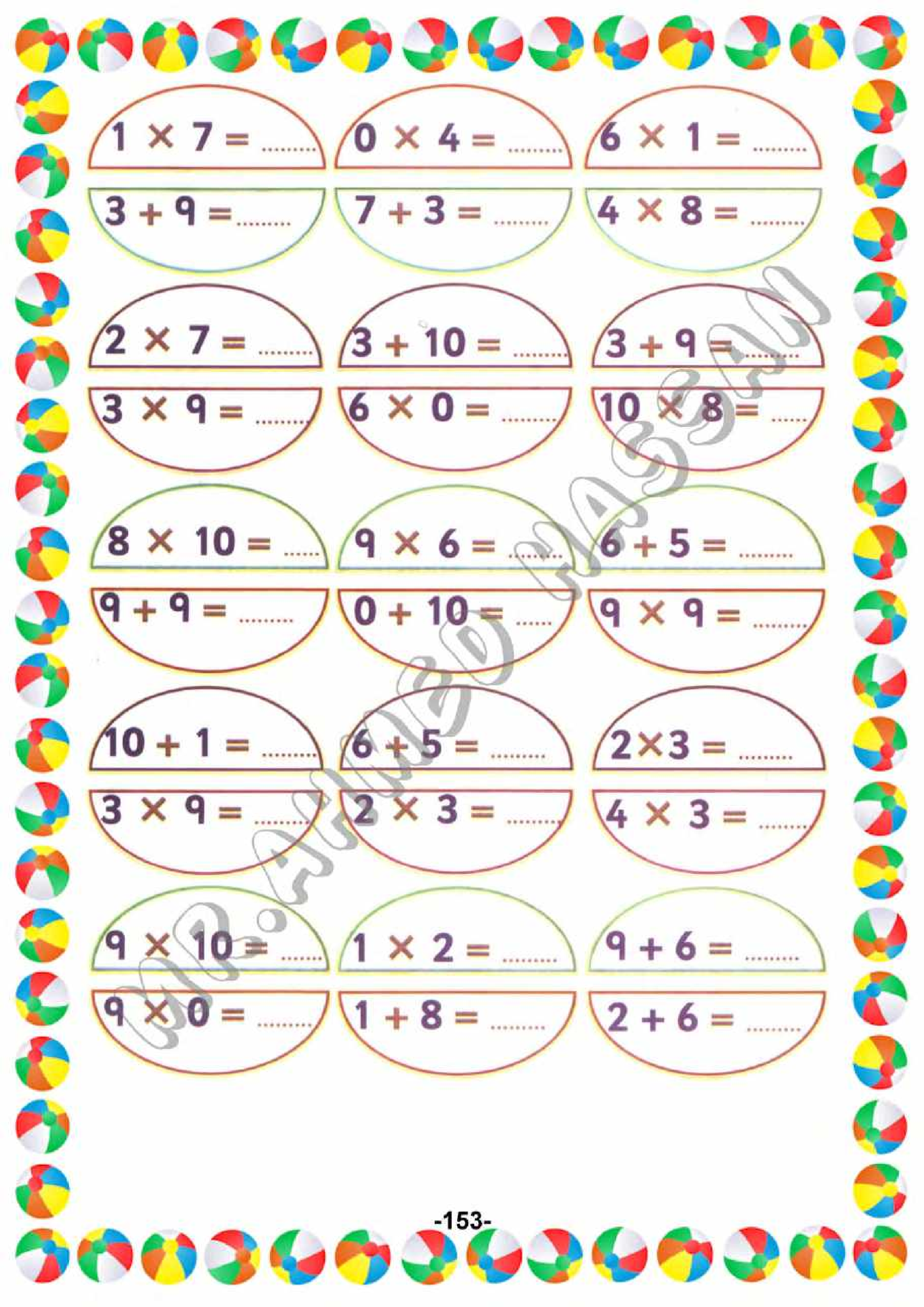
$6 \times 4 =$ .... $8 + 9 =$ .... $6 \times 7 =$ ....

$3 \times 3 =$ .... $5 + 8 =$ .... $4 + 4 =$ ....

$1 \times 1 =$ .... $2 \times 9 =$ .... $5 \times 10 =$ .....

$2 \times 4 =$ .... $0 + 4 =$ .... $9 \times 6 =$ ....

$1 + 9 =$ .... $2 + 6 =$ .... $5 + 10 =$ ....



1 × 7 = ... | 0 × 4 = ... | 6 × 1 = ...
3 + 9 = ... | 7 + 3 = ... | 4 × 8 = ...

2 × 7 = ... | 3 + 10 = ... | 3 + 9 = ...
3 × 9 = ... | 6 × 0 = ... | 10 × 8 = ...

8 × 10 = ... | 9 × 6 = ... | 6 + 5 = ...
9 + 9 = ... | 0 + 10 = ... | 9 × 9 = ...

10 + 1 = ... | 6 + 5 = ... | 2×3 = ...
3 × 9 = ... | 2 × 3 = ... | 4 × 3 = ...

9 × 10 = ... | 1 × 2 = ... | 9 + 6 = ...
9 × 0 = ... | 1 + 8 = ... | 2 + 6 = ...

Lesson 54:

Reading hundred thousand



We have different ways to show the number:

Thousands family						
Hundred Thousands	Ten Thousands	Thousands		Hundreds	Tens	Ones
4	8	3	,	2	1	9

First — Standard form

483 , 219

Read the numbers in digits

Second — Word form

Four hundred eighty three thousand, two hundred and nineteen.
Write the number in letters.

Third — Base ten form

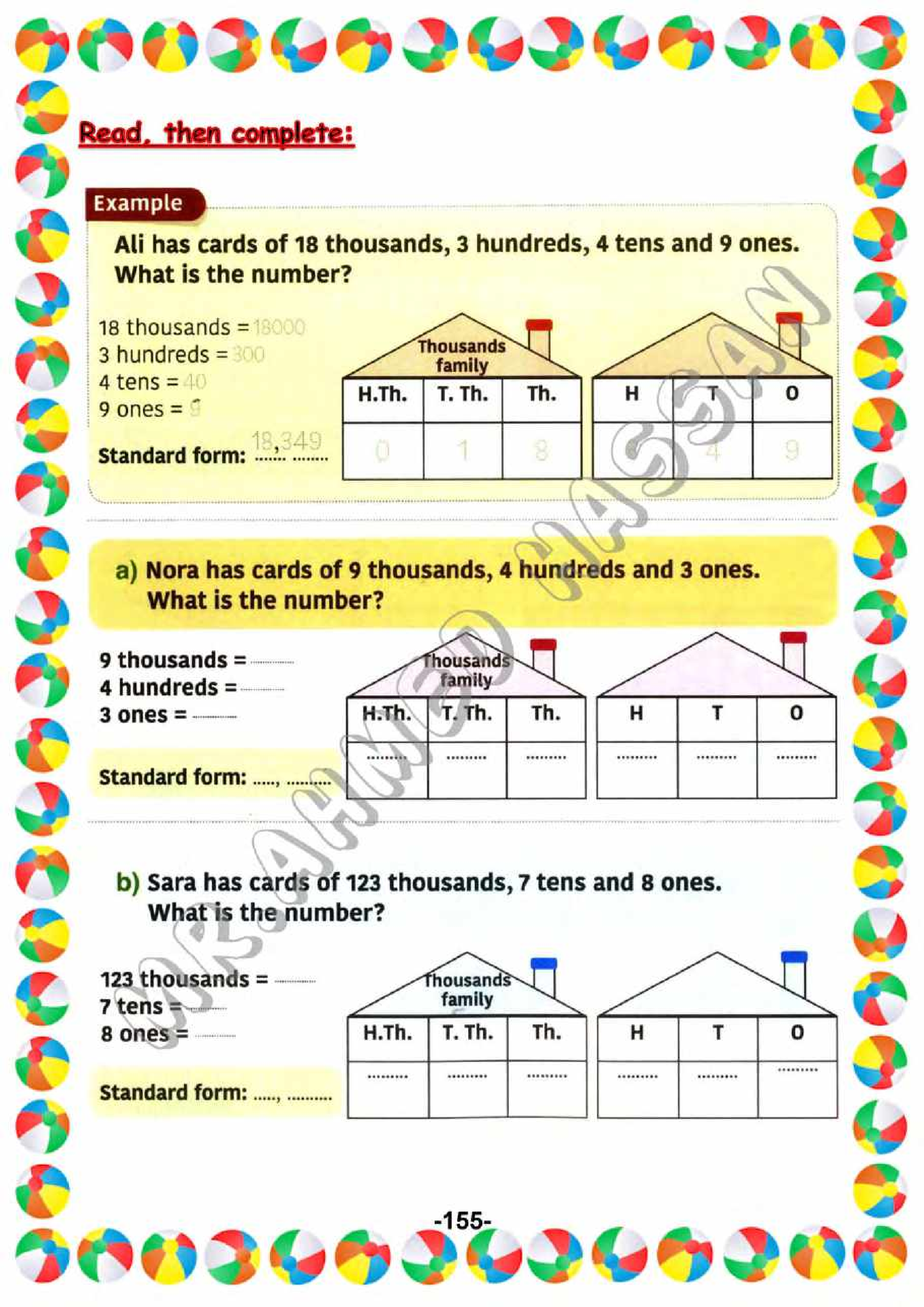
Thousands	Hundreds	Tens	Ones
3 ,	2	1	9

Fourth — Expanded form

400,000 + 80,000 + 3000 + 200 +10 + 9

Write each digit with its value.

The place value system is based on 10's.
Each place is 10 times greater than the one before.



Read, then complete:

Example

Ali has cards of 18 thousands, 3 hundreds, 4 tens and 9 ones. What is the number?

18 thousands = 18000
3 hundreds = 300
4 tens = 40
9 ones = 9

Standard form: 18,349

Thousands family					
H.Th.	T. Th.	Th.	H	T	O
0	1	8	3	4	9

a) Nora has cards of 9 thousands, 4 hundreds and 3 ones. What is the number?

9 thousands = ...
4 hundreds = ...
3 ones = ...

Standard form: ....., ...

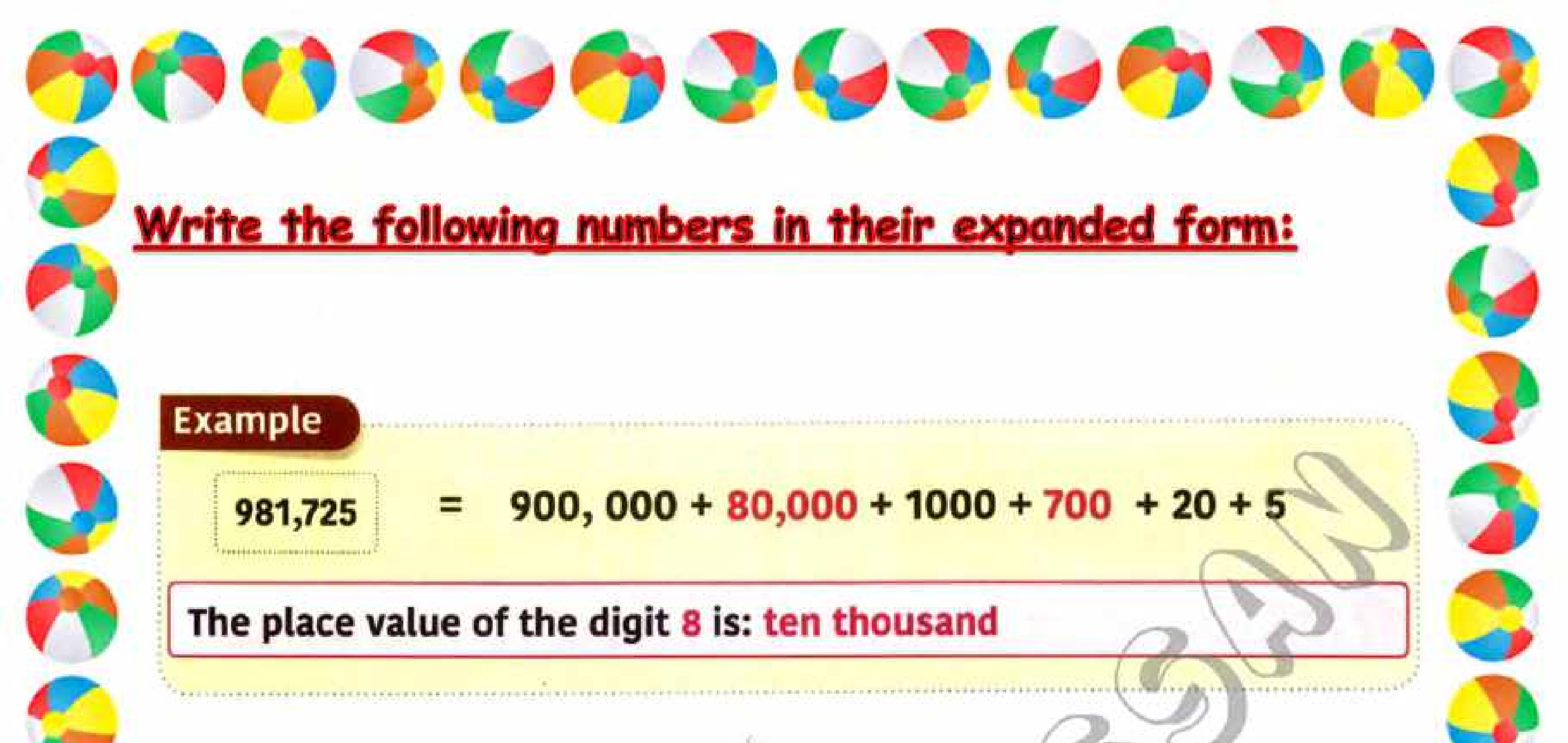
Thousands family					
H.Th.	T. Th.	Th.	H	T	O
....	....	....	....	....	....

b) Sara has cards of 123 thousands, 7 tens and 8 ones. What is the number?

123 thousands = ...
7 tens = ...
8 ones = ...

Standard form: ....., ...

Thousands family					
H.Th.	T. Th.	Th.	H	T	O
....	....	....	....	....	....



Write the following numbers in their expanded form:

Example

981,725 = 900, 000 + 80,000 + 1000 + 700 + 20 + 5

The place value of the digit 8 is: ten thousand

a) 63,411 = 60,000 + 3000 + 400 + ... + 1

The value of the digit 4 is: ....

b) 203,590 = ... + 0 + ... + 500 + 90 + ...

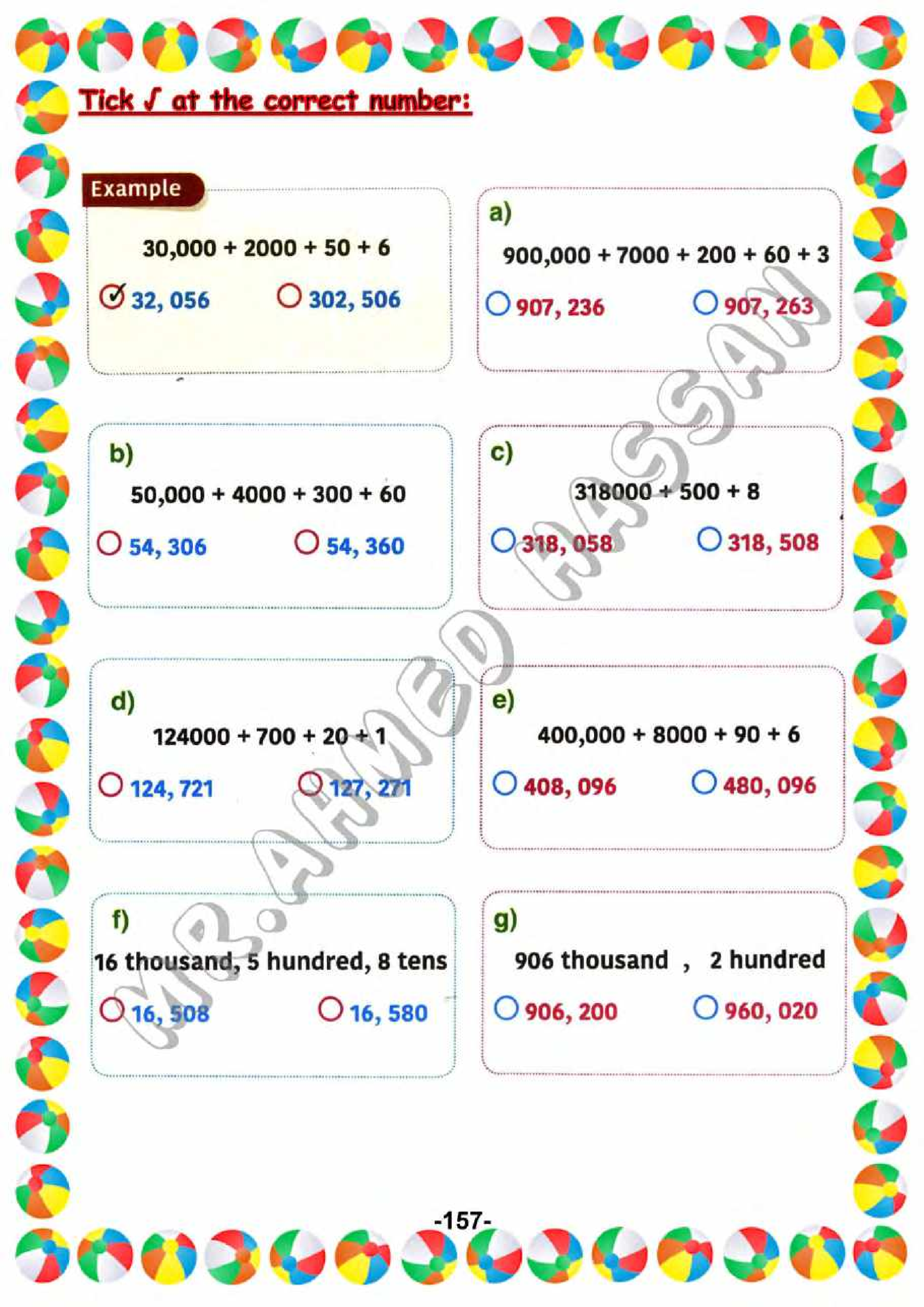
The place value of the digit 2 is: ....

c) 813,200 = ... + 10,000 + ... + ... + ... + ...

The value of the digit 8 is: ....

d) 700,018 = ... + 0 + ... + 0 + ... + ...

The place value of the digit 1 is: ....



Tick √ at the correct number:

Example

30,000 + 2000 + 50 + 6

☑ 32, 056   ○ 302, 506

a)

900,000 + 7000 + 200 + 60 + 3

○ 907, 236   ○ 907, 263

b)

50,000 + 4000 + 300 + 60

○ 54, 306   ○ 54, 360

c)

318000 + 500 + 8

○ 318, 058   ○ 318, 508

d)

124000 + 700 + 20 + 1

○ 124, 721   ○ 127, 271

e)

400,000 + 8000 + 90 + 6

○ 408, 096   ○ 480, 096

f)

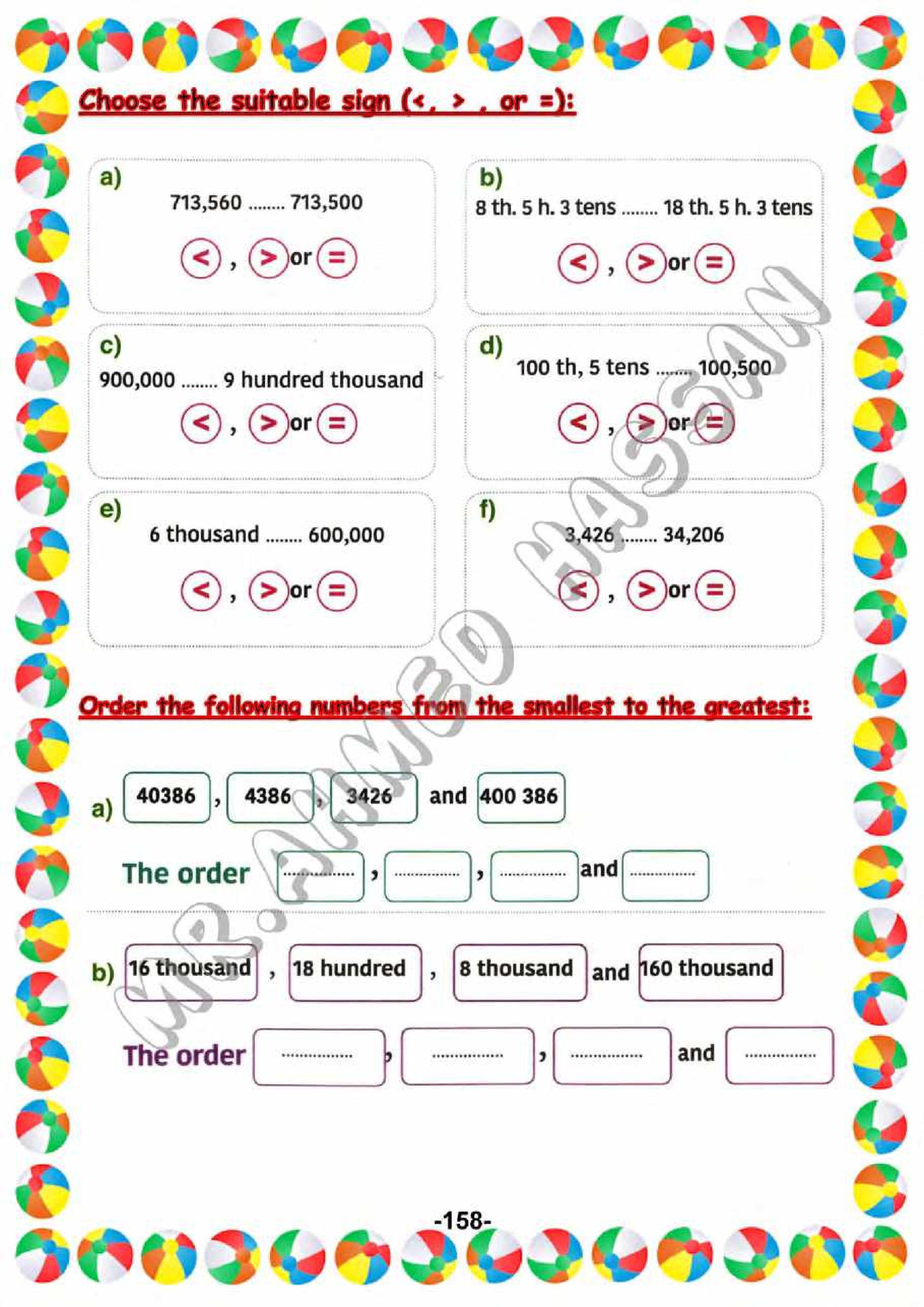
16 thousand, 5 hundred, 8 tens

○ 16, 508   ○ 16, 580

g)

906 thousand , 2 hundred

○ 906, 200   ○ 960, 020



Choose the suitable sign (<, > , or =):

a) 713,560 713,500

< , > or =

b) 8 th. 5 h. 3 tens .... 18 th. 5 h. 3 tens

< , > or =

c) 900,000 .... 9 hundred thousand

< , > or =

d) 100 th, 5 tens 100,500

< , > or =

e) 6 thousand 600,000

< , > or =

f) 3,426 34,206

< , > or =

Order the following numbers from the smallest to the greatest:

a) 40386 , 4386 , 3426 and 400 386

The order .... , ... , ... and ....

b) 16 thousand , 18 hundred , 8 thousand and 160 thousand

The order .... , ... , ... and ....

Lesson 55: Addition using different strategies

We can add 56 + 53 using 3 strategies.

First strategy

Place value drawing

$$\begin{array}{r} 56 \\ +\ 53 \\ \hline 109 \end{array}$$

Place value chart

Hundreds	Tens	Ones
1	0	9

We regroup

10 tens as 1 hundred

Second strategy

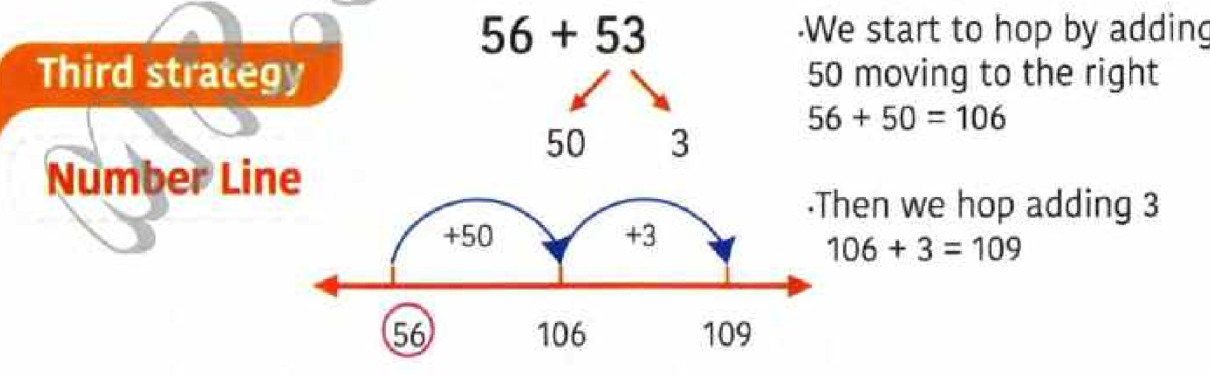
Decomposing

$$\begin{array}{r} 56 \\ +\ 53 \\ \hline 109 \end{array} \longrightarrow \begin{array}{r} 50 + 6 \\ 50 + 3 \\ \hline 100 + 9 \end{array}$$

the number into tens and ones

Third strategy

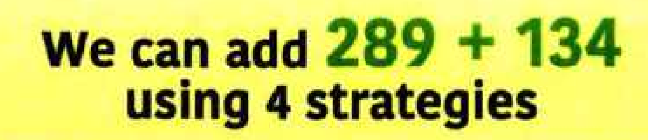
Number Line



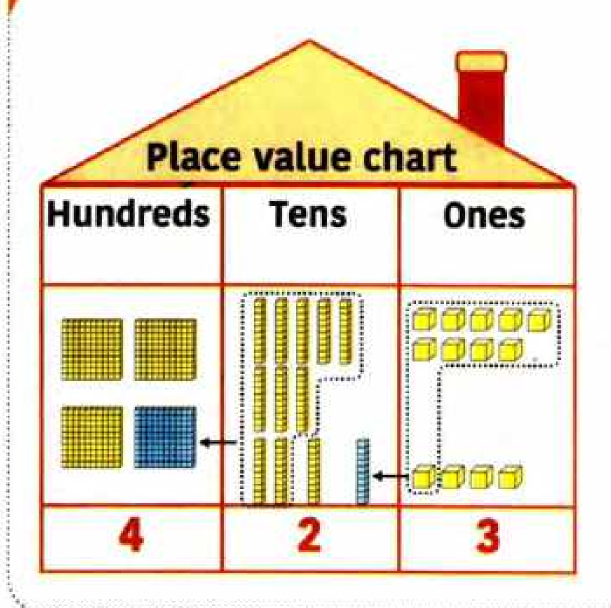
·We start to hop by adding 50 moving to the right
56 + 50 = 106

·Then we hop adding 3
106 + 3 = 109

We start with the bigger number, then decompose the smaller number into tens and ones.



First strategy: Place value drawing strategy



$$\begin{array}{r} 289 \\ +\ 134 \\ \hline 423 \end{array}$$

We regroup
10 tens as 1 hundred

We regroup
10 ones as 1 ten

Second strategy: Standard model operation

1- We add the ones digit
   9 + 4 = 13
   Write down 3, then carry up (1).

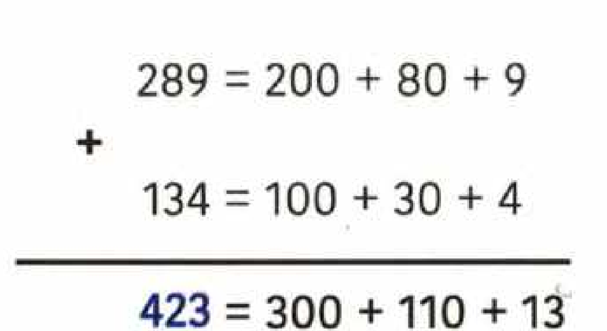
2- We add the tens digit
   8 + 3 + (1) = 12
   Write down 2, then carry up (1).

3- Add the hundreds digit
   2 + 1 + (1) = 4

	H	T	O
	(1)	(1)	
	2	8	9
+	1	3	4
	4	2	3



Third strategy: Decomposing strategy



$$289 = 200 + 80 + 9$$

$$+$$

$$134 = 100 + 30 + 4$$

$$423 = 300 + 110 + 13$$

	3	0	0
+	1	1	0
		1	3
	4	2	3

Fourth strategy: Open number line

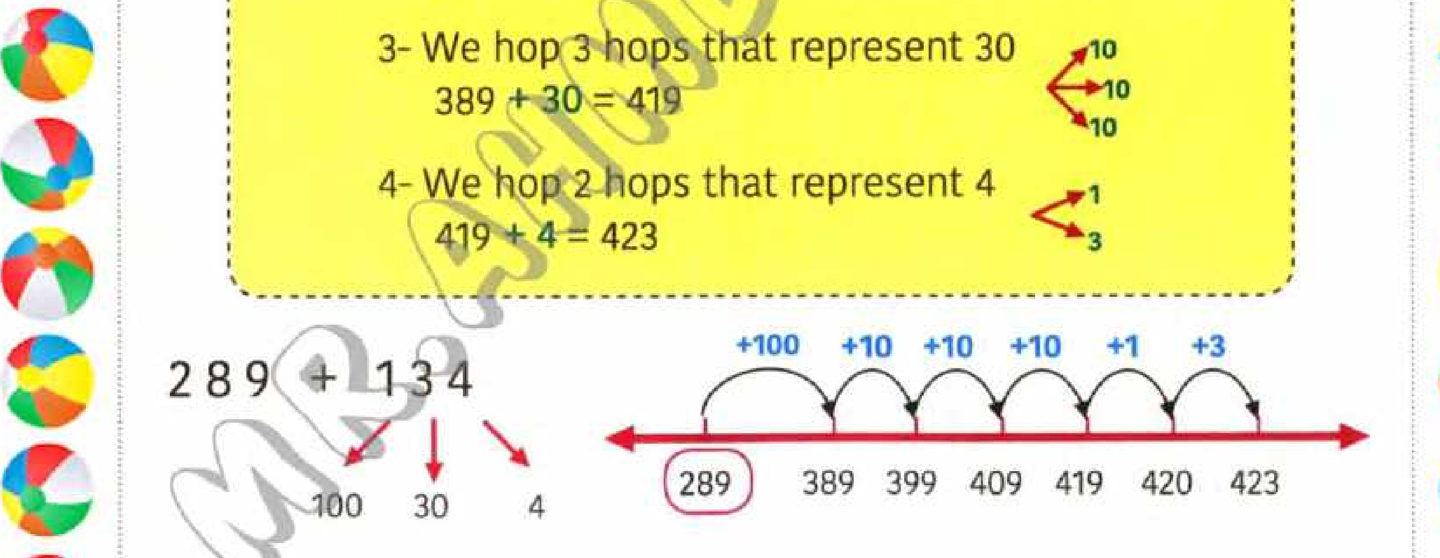
To add on an open number line

1- Start with the bigger addend 289

2- We start to hop moving to the right
289 + 100 = 389

3- We hop 3 hops that represent 30
389 + 30 = 419
(10, 10, 10)

4- We hop 2 hops that represent 4
419 + 4 = 423
(1, 3)





Solve by using decomposing and number line strategy:

Example

97 + 133

Decomposing

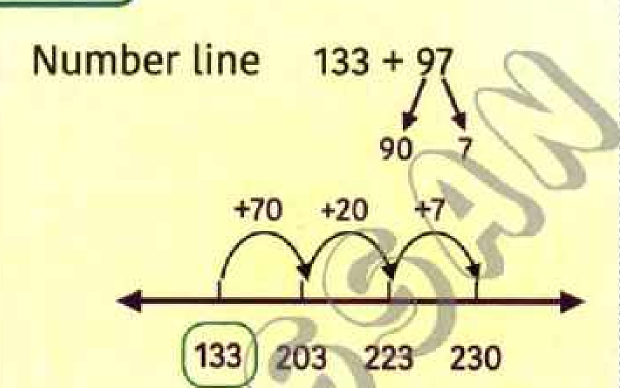
133 = 100 + 30 + 3

\+

97 = 0 + 90 + 7

100 + 120 + 10 = 230

Number line 133 + 97



a) **215 + 106**

Decomposing

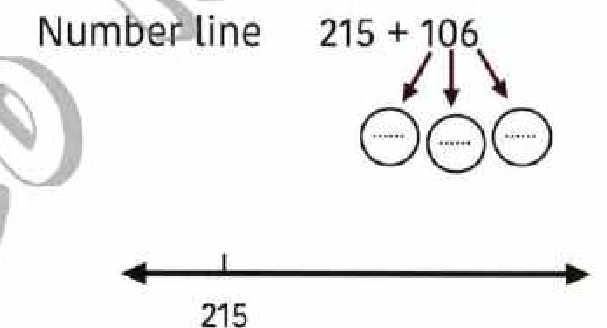
215 = ... + ... + ...

\+

106 = ... + ... + ...

....

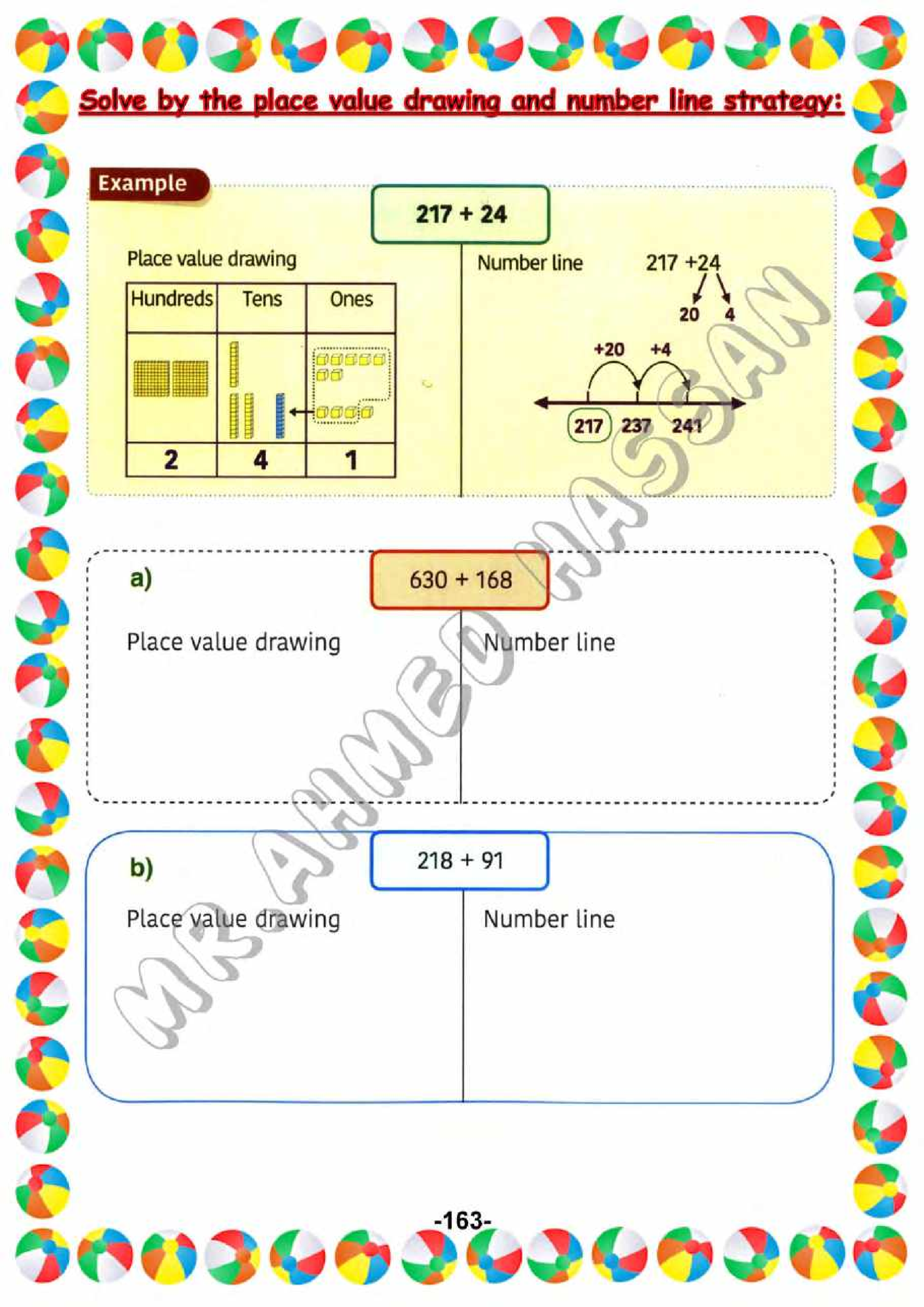
Number line 215 + 106



b) 723 + 145

Decomposing

Number line



Solve by the place value drawing and number line strategy:

Example

217 + 24

Place value drawing

Hundreds	Tens	Ones
2	**4**	**1**

Number line

217 +24

20 4

+20 +4

217 237 241

a) 630 + 168

Place value drawing

Number line

b) 218 + 91

Place value drawing

Number line

Lesson 56: Data table

We use the recorded data to answer the following questions.

Data table

Subject	Number of boys	Number of girls
Math	323	476
Arabic	246	388

Estimate the total number of boys and girls which like Arabic, then check if the estimation is close or not to actual result.

There are 2 types of estimation:

First : Rounding estimation

we circle the tens place

Boys 2(4)6 rounded down to 200

Because the number in the tens place is less than 5

Girls 3(8)8 rounded up to 400

Because the number in the tens place is more than 5

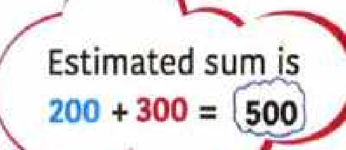
Estimated sum is
200 + 400 = 600

Second : Front-end estimation

We circle the highest value

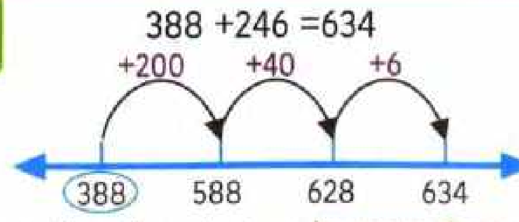
Boys (2)4 6 we think about it as 200

Girls (3)8 8 we think about it as 300

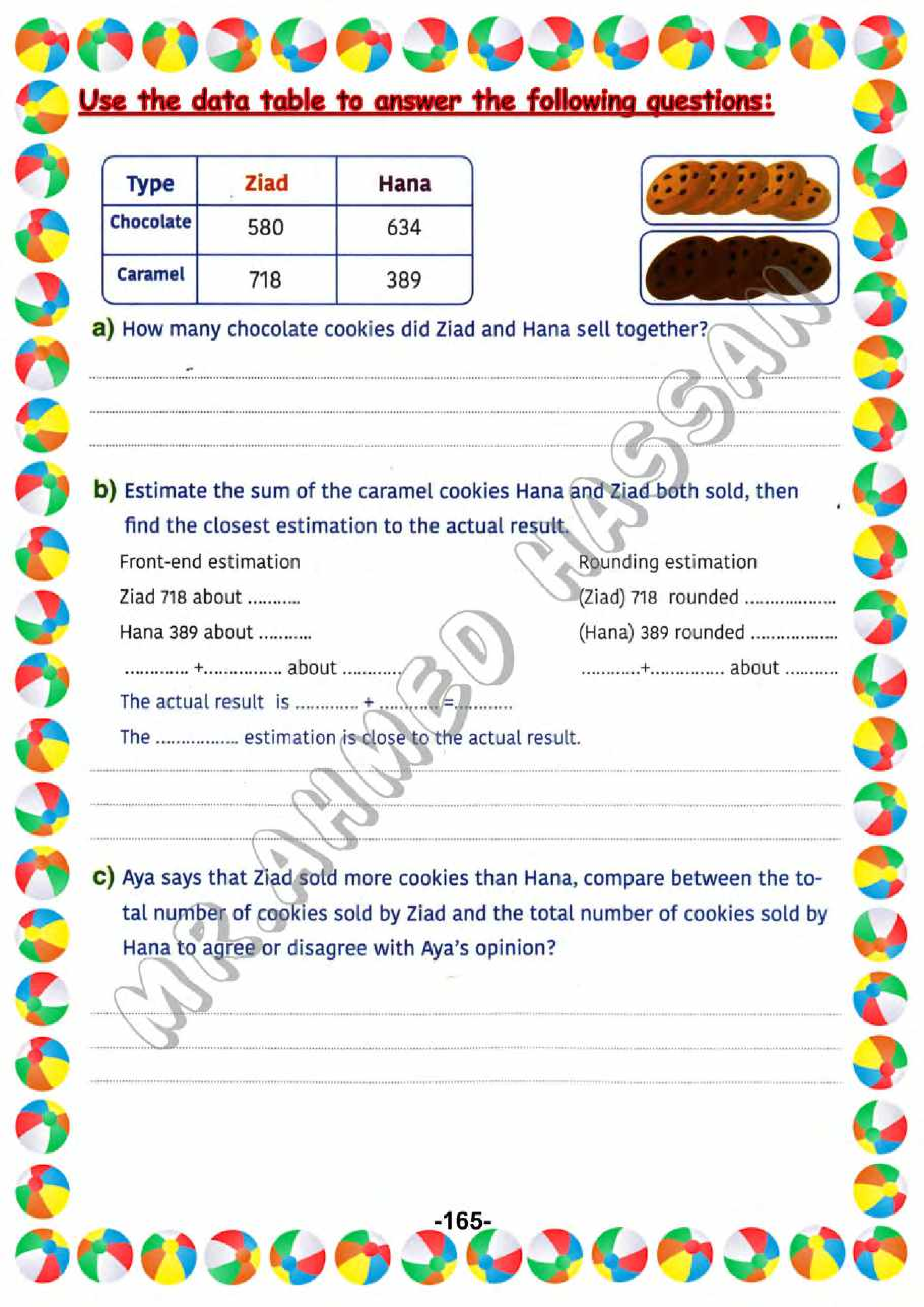


The actual sum:

388 +246 =634



We find that Rounding estimation strategy is more close to the actual result.



Use the data table to answer the following questions:

Type	Ziad	Hana
Chocolate	580	634
Caramel	718	389

a) How many chocolate cookies did Ziad and Hana sell together?

....

....

....

b) Estimate the sum of the caramel cookies Hana and Ziad both sold, then find the closest estimation to the actual result.

Front-end estimation

Ziad 718 about ....

Hana 389 about ....

.... +.............. about ....

Rounding estimation

(Ziad) 718 rounded ....

(Hana) 389 rounded ....

............+.............. about ....

The actual result is .... + ... =..........

The .... estimation is close to the actual result.

....

....

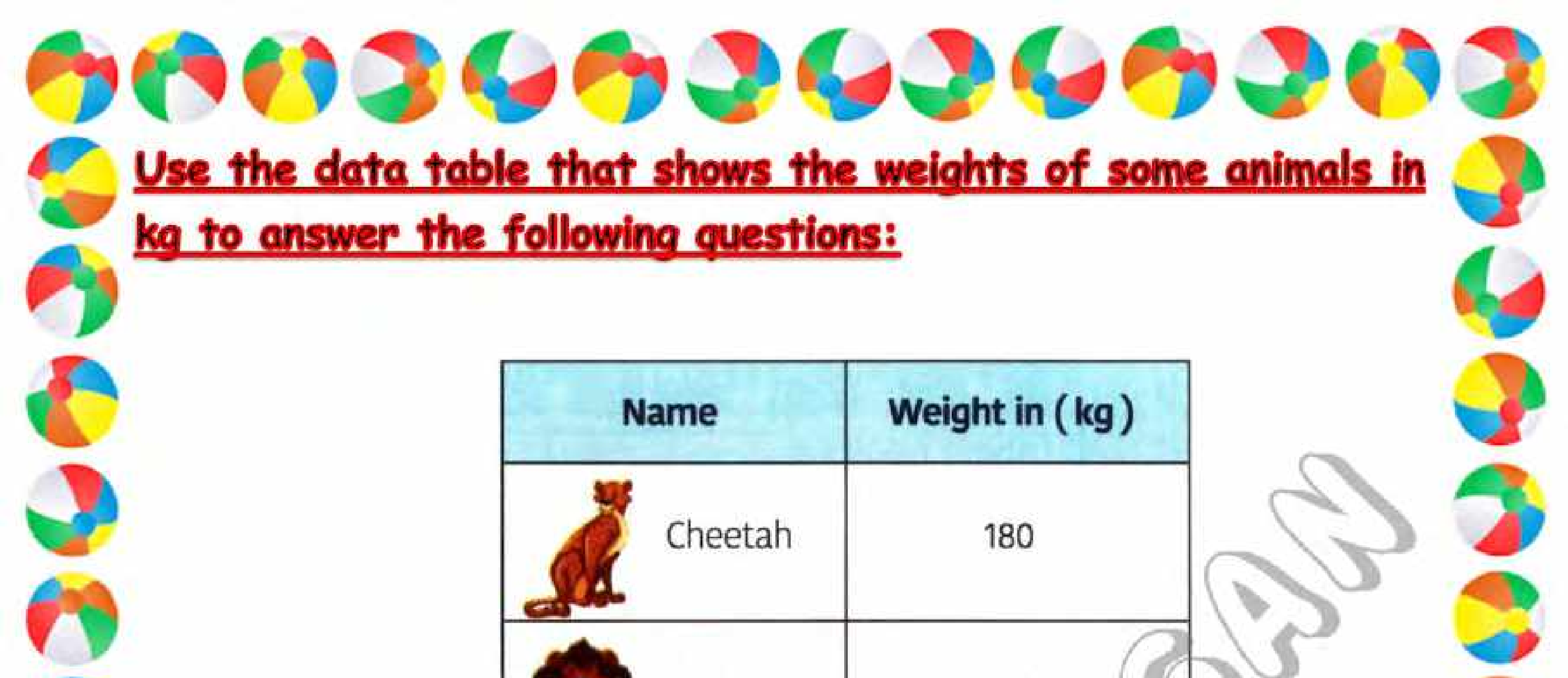
....

c) Aya says that Ziad sold more cookies than Hana, compare between the total number of cookies sold by Ziad and the total number of cookies sold by Hana to agree or disagree with Aya's opinion?

....

....

....



Use the data table that shows the weights of some animals in kg to answer the following questions:

Name	Weight in (kg)
Cheetah	180
Lion	230
Tiger	227

a) What is the weight of cheetah and lion together?

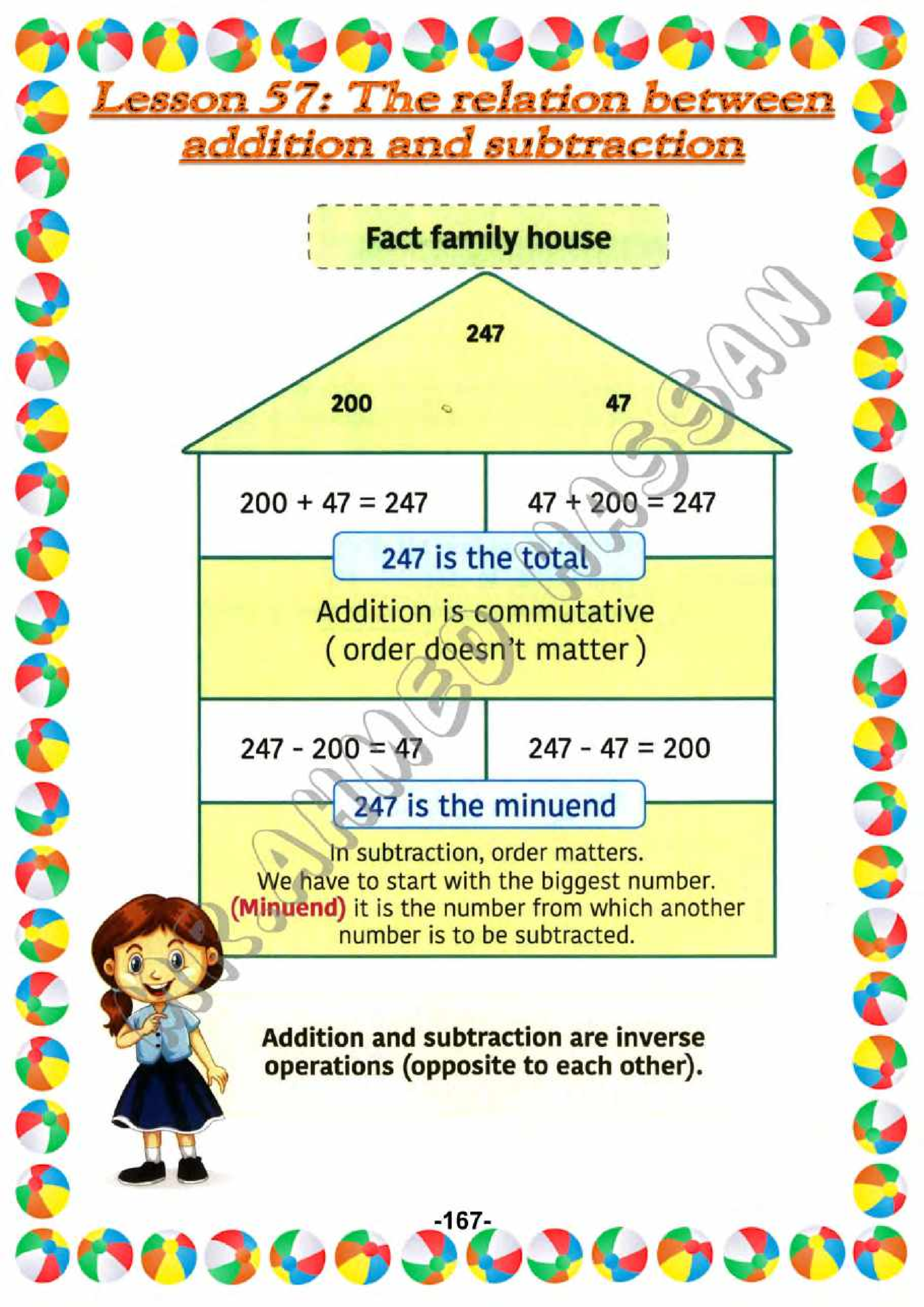
Use decomposing strategy.

b) What is the weight of both tiger and lion?

Use place value picture.

c) Order the animals' weights from the lightest animal to the heaviest animal .... , ... , ...

Lesson 57: The relation between addition and subtraction



Fact family house

247	
200	47
200 + 47 = 247	47 + 200 = 247

247 is the total

Addition is commutative
(order doesn't matter)

247 - 200 = 47	247 - 47 = 200

247 is the minuend

In subtraction, order matters.
We have to start with the biggest number.
(Minuend) it is the number from which another number is to be subtracted.

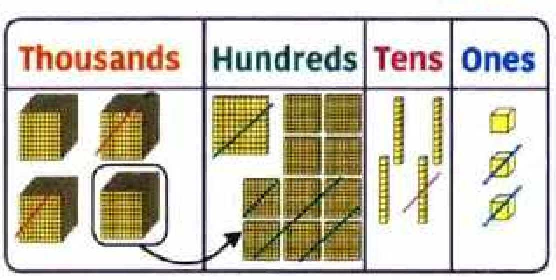
Addition and subtraction are inverse operations (opposite to each other).

To subtract 4143 - 2712 Using different strategies

First Using place value picture:

4143 – 2712 = 1431

(2000+700+10+2)



Thousands	Hundreds	Tens	Ones
1	4	3	1

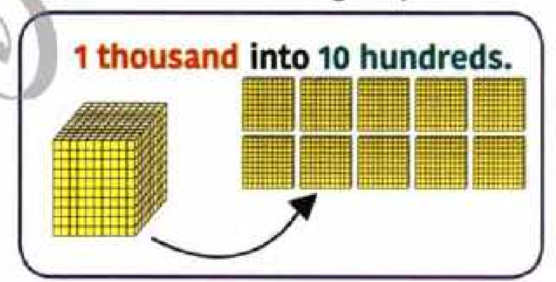
1- Start with the ones & subtract 2 ones from 3 (3 - 2 = 1)

2- Then subtract 10 tens from 40 (40 – 10 = 30)

3- We can't subtract 7 hundreds from 1 hundred, so we need to regroup.

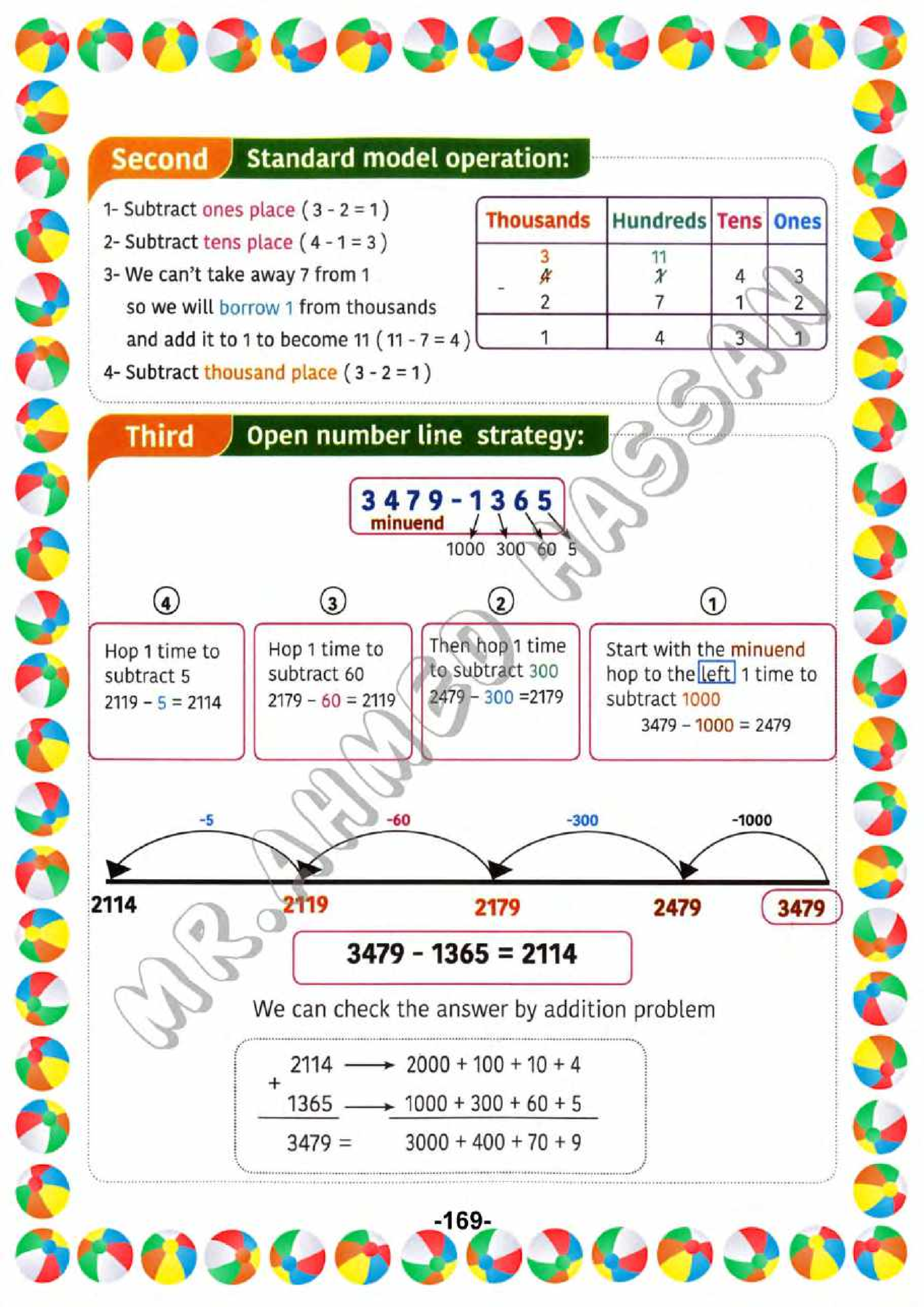
4- Subtract 2 thousand from 3 thousand

(3000 - 2000 = 1000)



We can check our answer by addition problem.

	1431	⟶	1000 + 400 + 30 + 1
+			
	2712	⟶	2000 + 700 + 10 + 2
	4143 =		3000 + 1100 + 40 + 3



Second Standard model operation:

1- Subtract ones place (3 - 2 = 1)
2- Subtract tens place (4 - 1 = 3)
3- We can't take away 7 from 1
so we will borrow 1 from thousands
and add it to 1 to become 11 (11 - 7 = 4)
4- Subtract thousand place (3 - 2 = 1)

	Thousands	Hundreds	Tens	Ones
	3 ~~4~~	11 ~~1~~	4	3
-	2	7	1	2
	1	4	3	1

Third Open number line strategy:

3 4 7 9 - 1 3 6 5
minuend
1000 300 60 5

① Start with the minuend hop to the left 1 time to subtract 1000
3479 – 1000 = 2479

② Then hop 1 time to subtract 300
2479 – 300 =2179

③ Hop 1 time to subtract 60
2179 – 60 = 2119

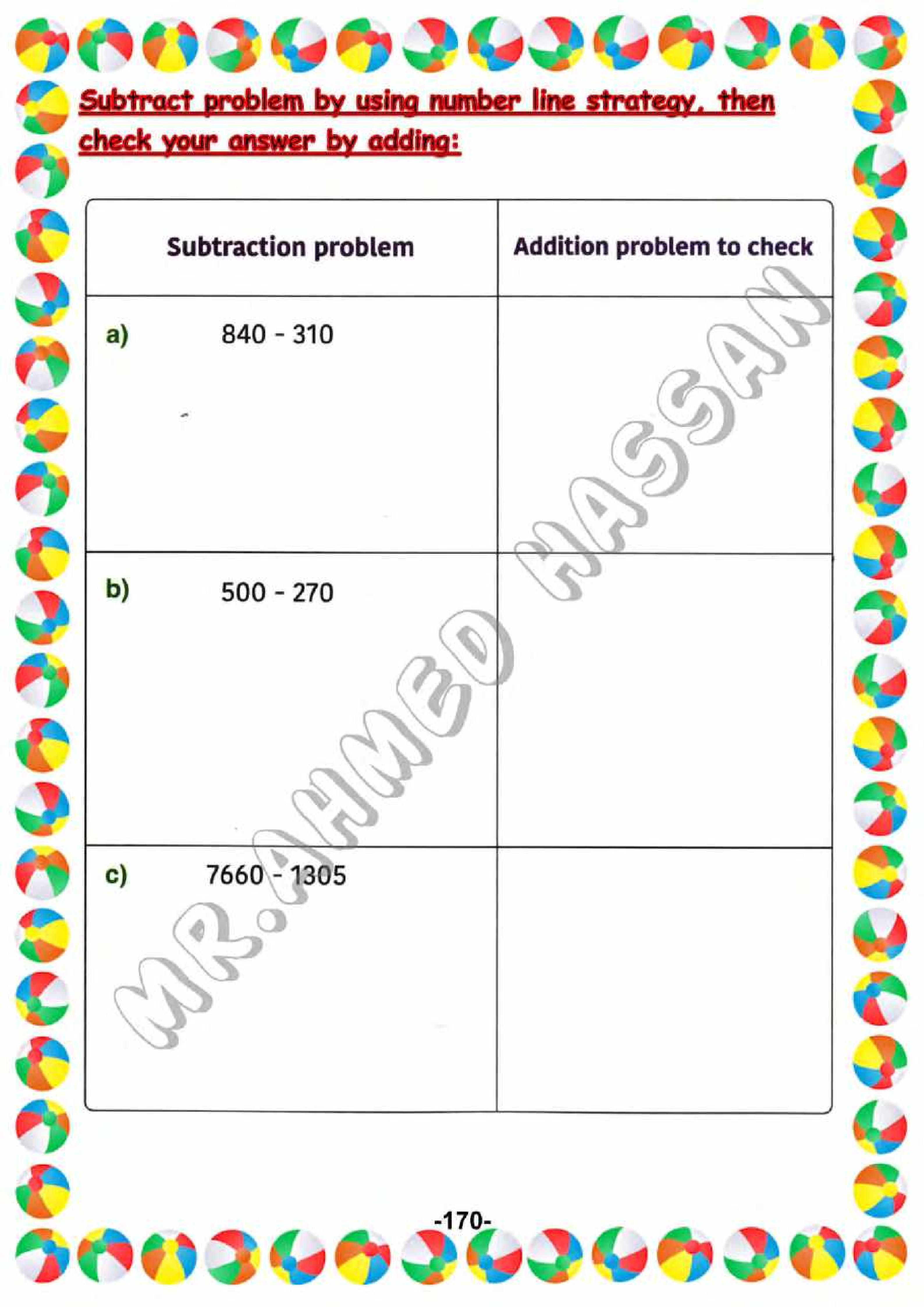
④ Hop 1 time to subtract 5
2119 – 5 = 2114

3479 - 1365 = 2114

We can check the answer by addition problem

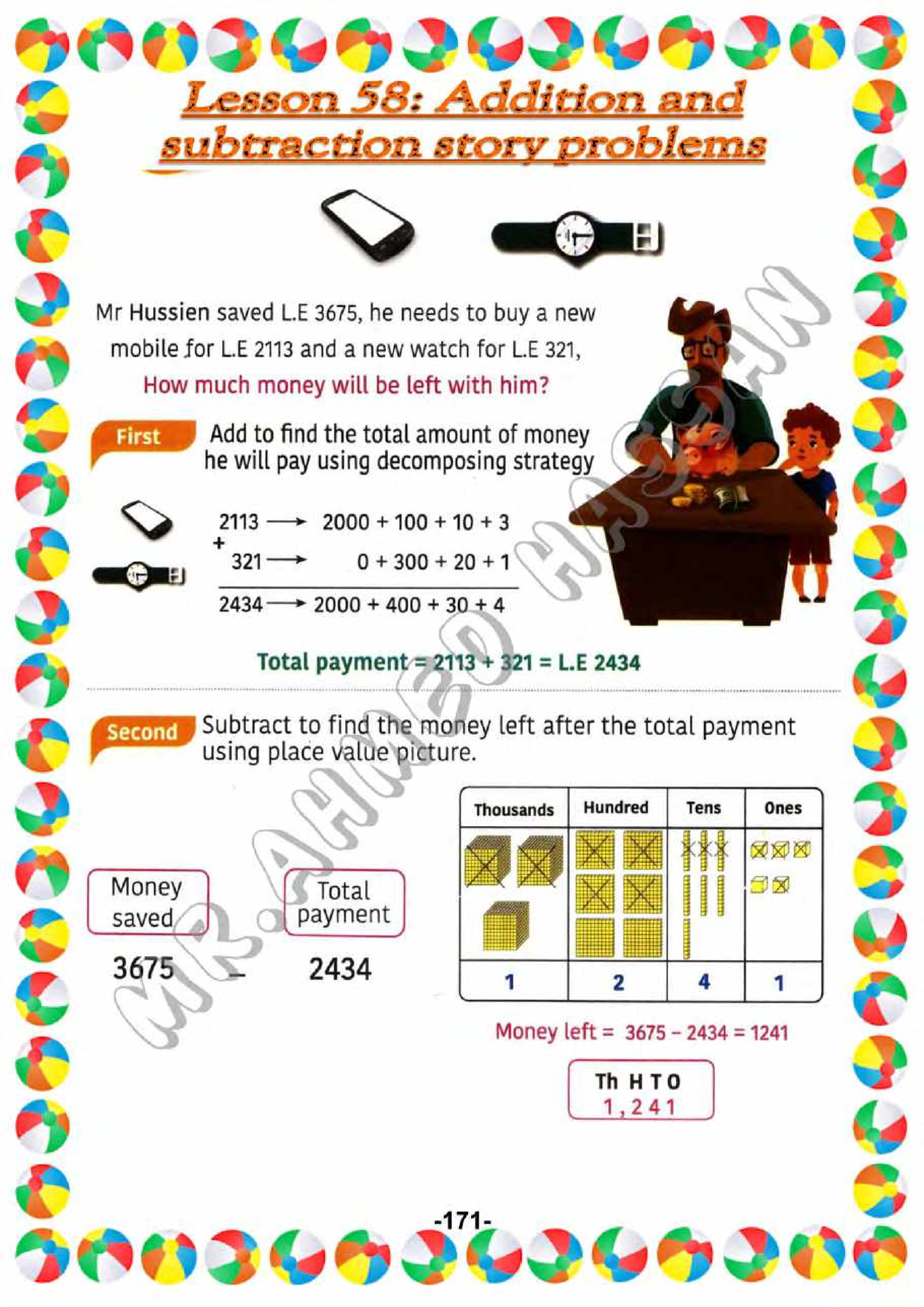
$$\begin{array}{r} 2114 \\ + \; 1365 \\ \hline 3479 \end{array}$$

2114 ⟶ 2000 + 100 + 10 + 4
1365 ⟶ 1000 + 300 + 60 + 5
3479 = 3000 + 400 + 70 + 9



Subtract problem by using number line strategy, then check your answer by adding:

Subtraction problem	Addition problem to check
a) 840 - 310	
b) 500 - 270	
c) 7660 - 1305	



Lesson 58: Addition and subtraction story problems

Mr Hussien saved L.E 3675, he needs to buy a new mobile for L.E 2113 and a new watch for L.E 321,

How much money will be left with him?

First Add to find the total amount of money he will pay using decomposing strategy

$$
\begin{array}{rcl}
2113 & \longrightarrow & 2000 + 100 + 10 + 3 \\
+\ 321 & \longrightarrow & 0 + 300 + 20 + 1 \\
\hline
2434 & \longrightarrow & 2000 + 400 + 30 + 4
\end{array}
$$

Total payment = 2113 + 321 = L.E 2434

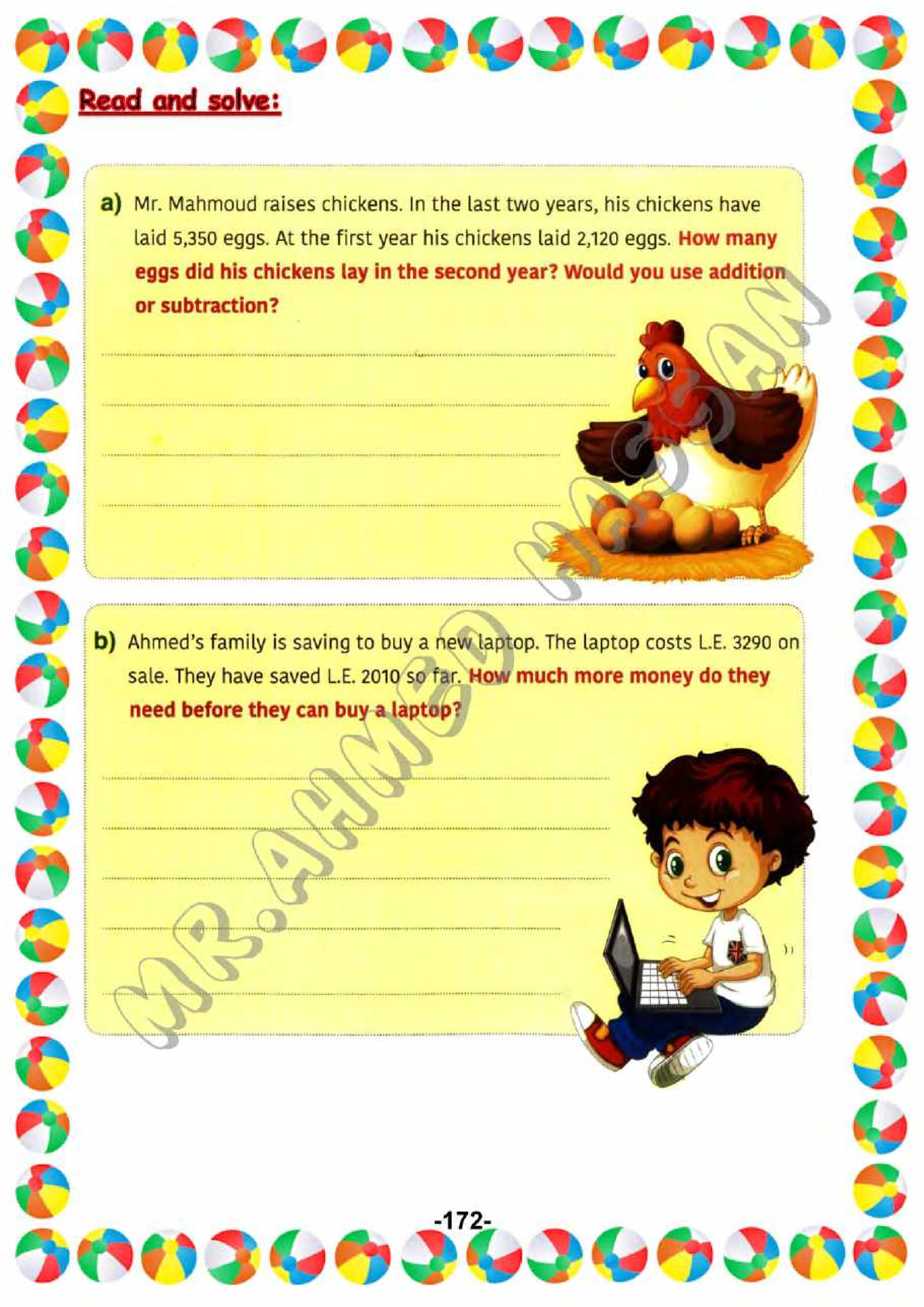
Second Subtract to find the money left after the total payment using place value picture.

Money saved		Total payment
3675	−	2434

Thousands	Hundred	Tens	Ones
1	2	4	1

Money left = 3675 − 2434 = 1241

Th H T O
1,241



Read and solve:

a) Mr. Mahmoud raises chickens. In the last two years, his chickens have laid 5,350 eggs. At the first year his chickens laid 2,120 eggs. **How many eggs did his chickens lay in the second year? Would you use addition or subtraction?**

....

....

....

....

b) Ahmed's family is saving to buy a new laptop. The laptop costs L.E. 3290 on sale. They have saved L.E. 2010 so far. **How much more money do they need before they can buy a laptop?**

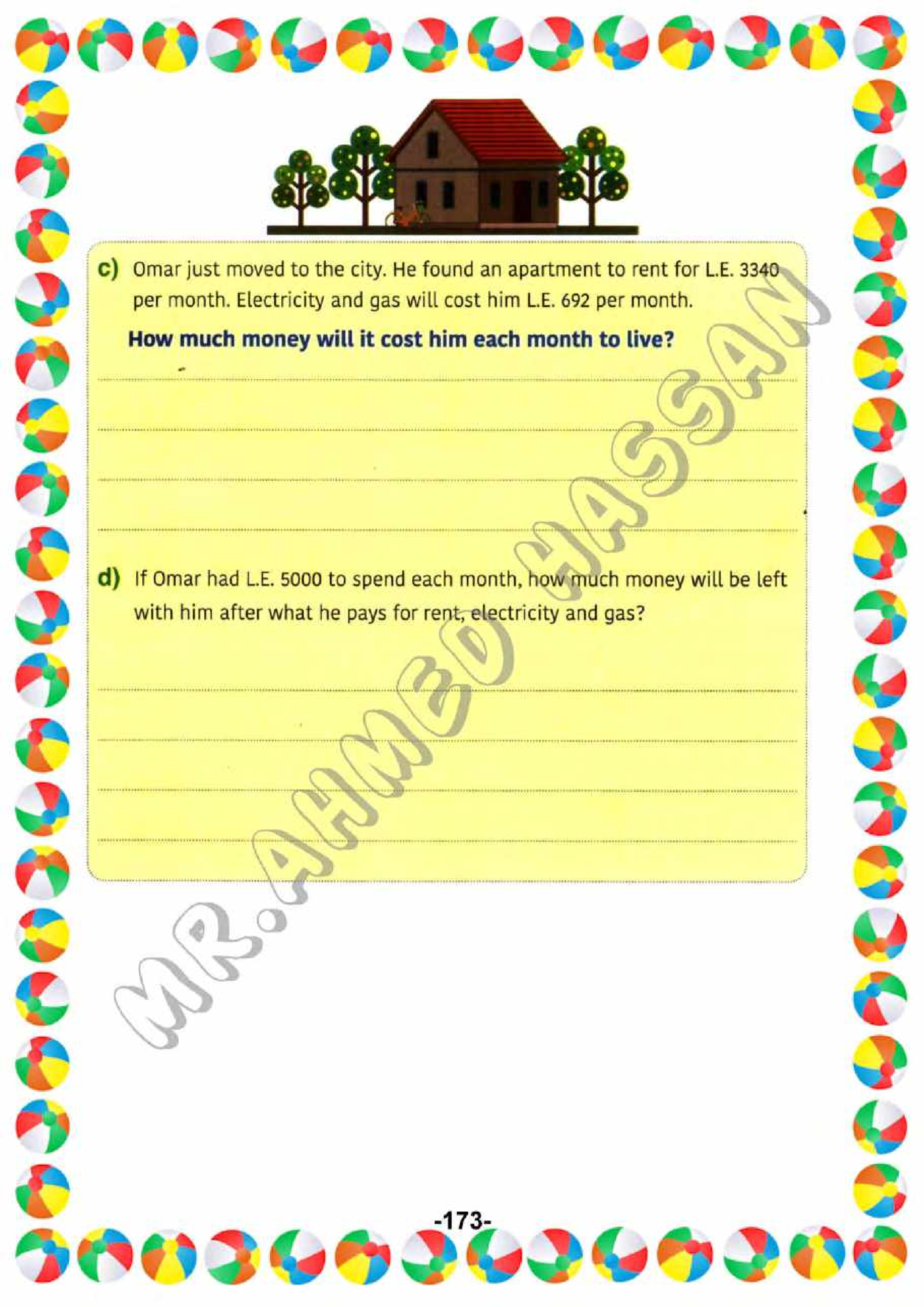
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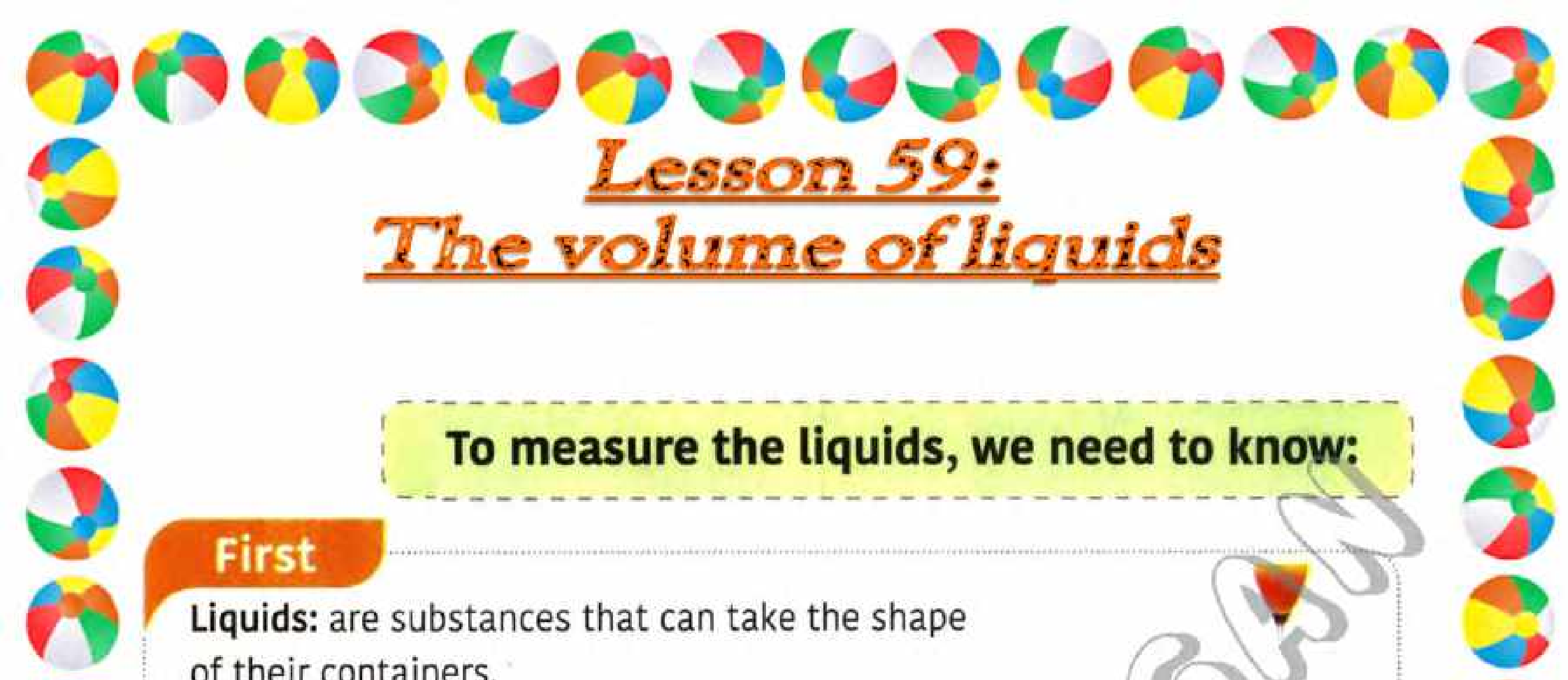
....



c) Omar just moved to the city. He found an apartment to rent for L.E. 3340 per month. Electricity and gas will cost him L.E. 692 per month.

How much money will it cost him each month to live?

d) If Omar had L.E. 5000 to spend each month, how much money will be left with him after what he pays for rent, electricity and gas?



Lesson 59:
The volume of liquids

To measure the liquids, we need to know:

First



Liquids: are substances that can take the shape of their containers.

Second

The volume: is the measurement of how much the container holds.

volume is about 500 mL

Third

The measuring units:

First unit: Milliliter is used to measure small amount of liquid as dropper.

Second unit: Liter is used to measure large amount of liquid as bottle of water.





Each cup holds 100 mL

All cups hold = 10 × 100 = 1000 mL = 1 liter

1 liter contains 1000 millilitres.

Liter (L) can be broken into a small unit called milliliter (ml).



Write the suitable unit to measure the liquid volume:

Example: liter

a) ______ b) ______ c) ______

d) ______ e) ______ f) ______ g) ______

Read the following measurements:

Example: Volume = 900 mL

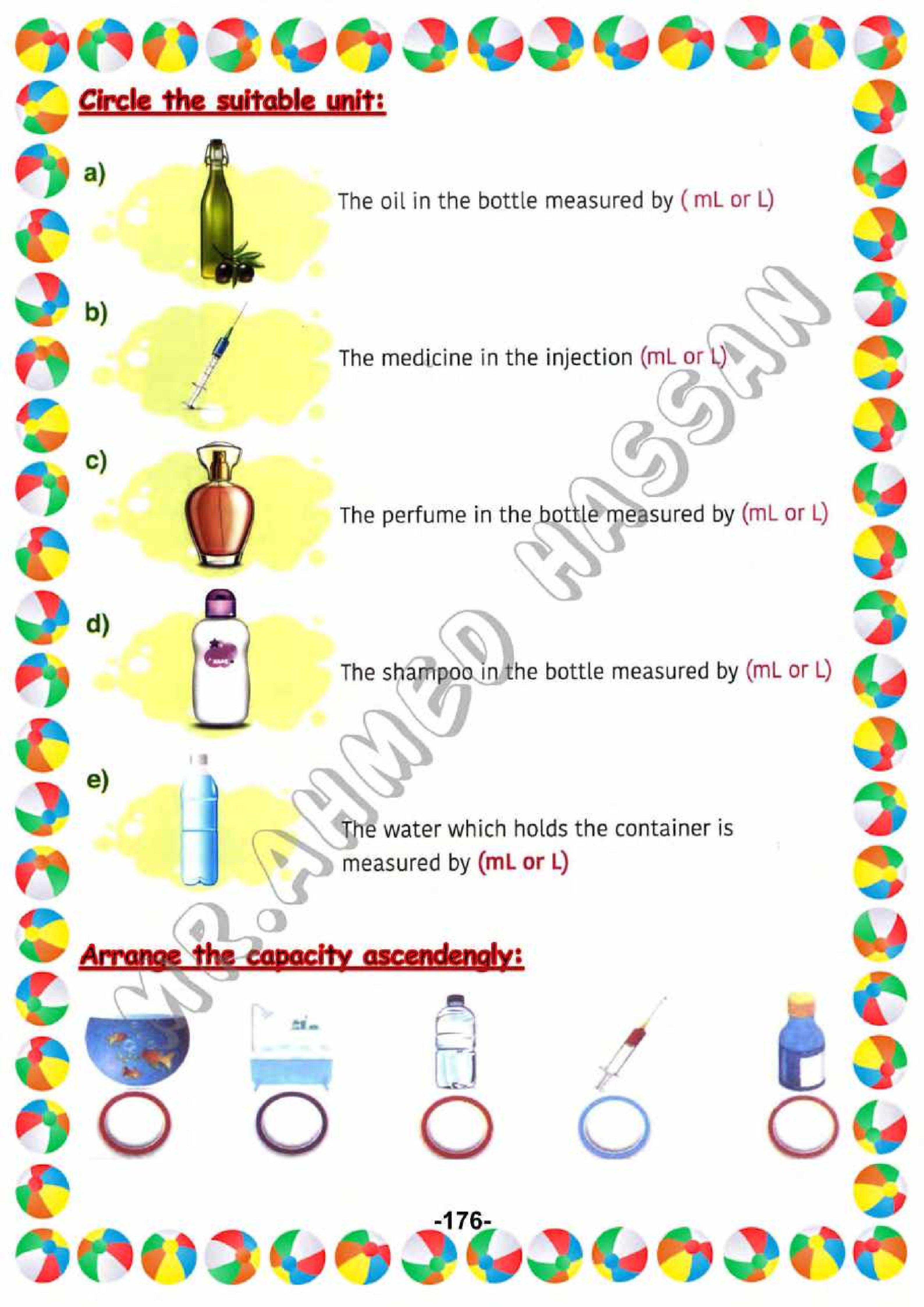
a) Volume = ... mL

b) Volume = ... mL

c) Volume = ... mL

d) Volume = ... mL

e) Volume = ... mL



Circle the suitable unit:

a) The oil in the bottle measured by (mL or L)

b) The medicine in the injection (mL or L)

c) The perfume in the bottle measured by (mL or L)

d) The shampoo in the bottle measured by (mL or L)

e) The water which holds the container is measured by **(mL or L)**

Arrange the capacity ascendengly:

Lesson 60: The graduated cylinder to measure liquids

The graduated cylinder:

- It is a tool to measure the liquids' volume.
- It is graduated from 0 to 100.
- It holds 100 mL.
- The graduated cylinder is used to measure the capacity of liquids inside it.
- The numbers listed are skip counted by 10's.

100 90 80 70 60 50 40 30 20 10

Read the following measurements:

Example

Volume = 50 mL

a) Volume = ... mL

b) Volume = ... mL

c) Volume = ... m

d) Volume = ... mL

e) Volume = ... mL



Order the following objects according to their volume from the least to the greatest:

The order is: .... , ... , ... , ...

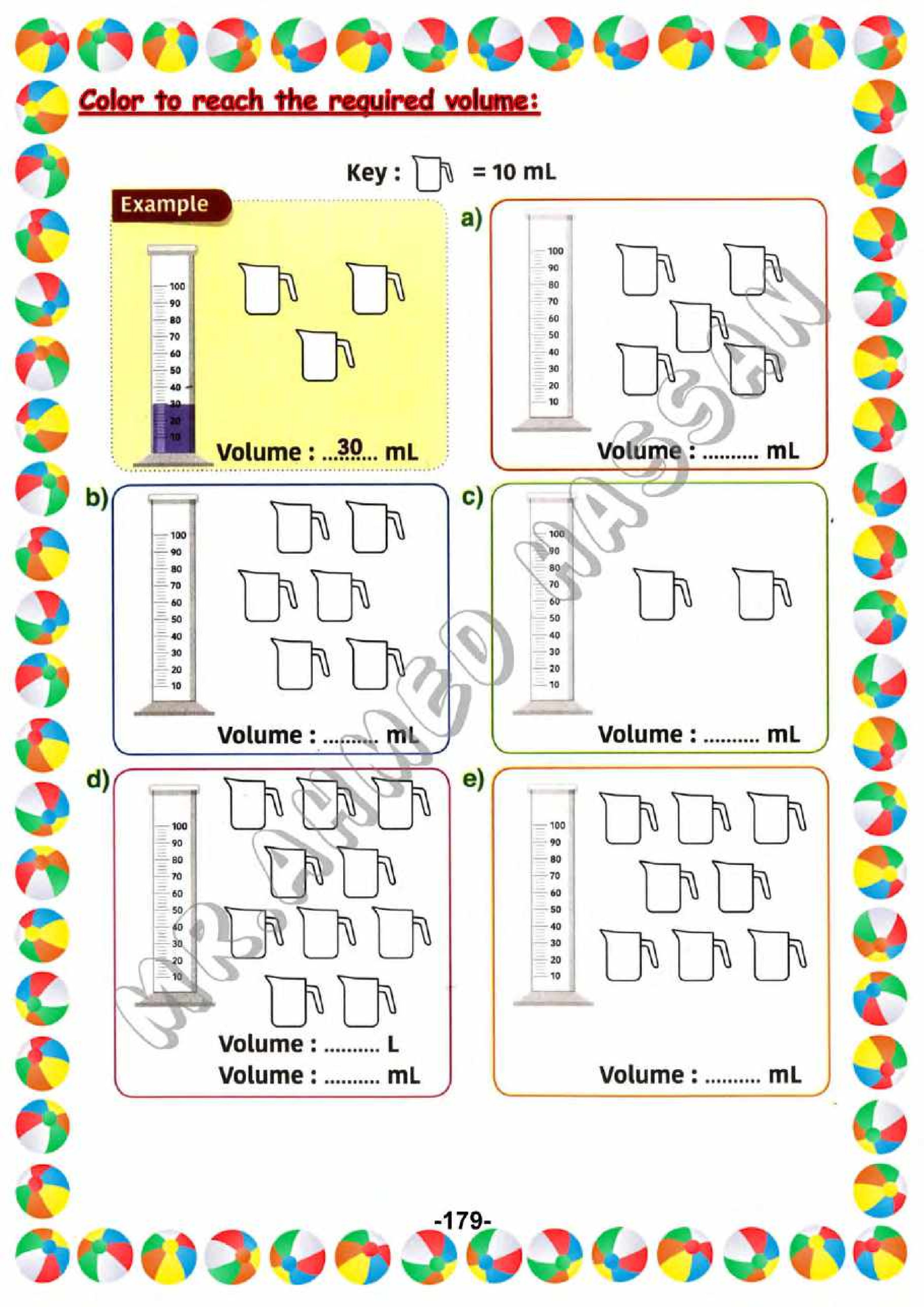
Read the amount of the liquid the graduated cylinder holds:

a) ....

b) ....

c) ....

d) ....



Color to reach the required volume:

Key : [jug] = 10 mL

Example

Volume : ...30... mL

a) Volume : .... mL

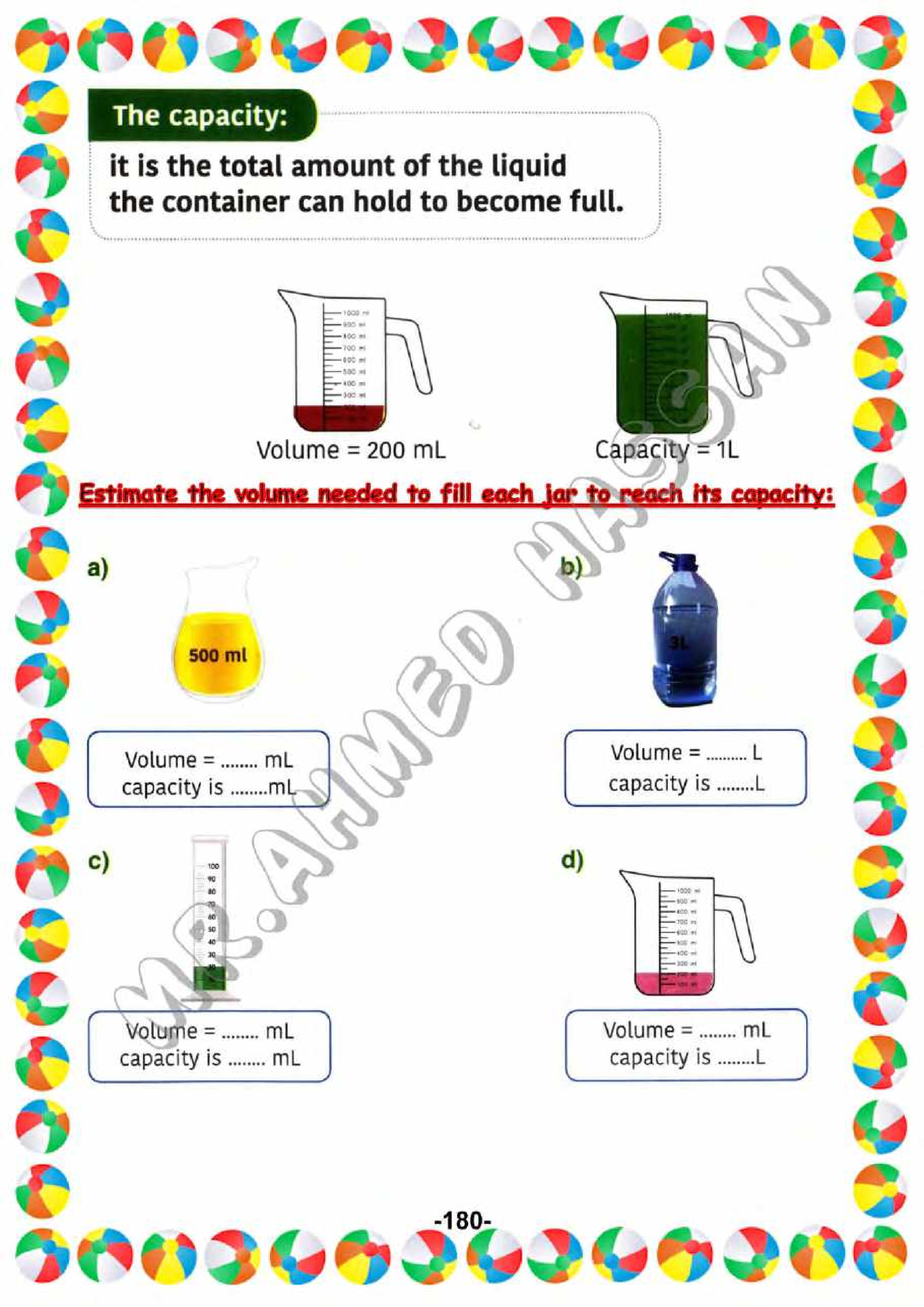
b) Volume : .... mL

c) Volume : .... mL

d) Volume : L

Volume : .... mL

e) Volume : .... mL



The capacity:

it is the total amount of the liquid the container can hold to become full.

Volume = 200 mL

Capacity = 1L

Estimate the volume needed to fill each jar to reach its capacity:

a)

500 ml

Volume = ... mL
capacity is ....mL

b)

3L

Volume = ... L
capacity is L

c)

Volume = ... mL
capacity is .... mL

d)

Volume = ... mL
capacity is L